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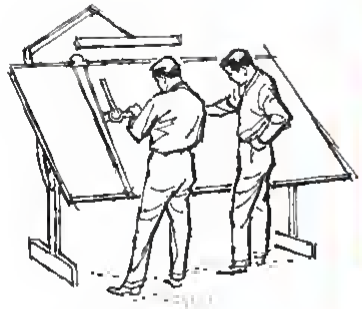
Aviation Week

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BUYERS' GUIDE ISSUE



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Floatability .015 radially from center min
For use with parent materials of .040 min. thickness
Material Carbon or Alloy Steel



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Service Temperature 500 F.
Material Carbon Steel



MK3400
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Tensile Strength 160,000psi
Service Temperature 500 F.
Material Carbon Steel



MK4400
Miniature short lug anchor nut
Tensile Strength 160,000psi
Service Temperature 500 F.
Material Carbon Steel



MF1400
Miniature 2 lug floating anchor nut
Tensile Strength 160,000psi
Service Temperature 500 F
Material Carbon Steel
(Nut and basket)



MF1905B
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Service Temperature 500 F.
Material Carbon Steel
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MK1031
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Tensile Strength 125,000psi
Service Temperature 900 F
Material A286 Stainless Steel
(Non magnetic)



MK2031
Miniature 1 lug anchor nut
Tensile Strength 125,000psi
Service Temperature 900 F
Material A286 Stainless Steel
(Non magnetic)



MK3031
Miniature corner anchor nut
Tensile Strength 125,000psi
Service Temperature 900 F
Material A286 Stainless Steel
(Non magnetic)



MK4031
Miniature short lug anchor nut
Tensile Strength 125,000psi
Service Temperature 900 F
Material A286 Stainless Steel
(Non magnetic)



MF6000
Miniature right angle floating anchor nut
Tensile Strength 125,000psi
Service Temperature 500 F
Material Carbon Steel
(Nut and basket)



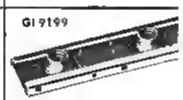
MF1031
Miniature 2 lug floating c bored corrosion resistant anchor nut
Tensile Strength 125,000psi
Service Temperature 900 F
Material A286 Stainless Steel
(Non magnetic)



MF6031
Miniature right angle floating corrosion resistant anchor nut
Tensile Strength 125,000psi
Service Temperature 900 F
Material A286 Stainless Steel
(Non magnetic)



H41
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GI 9199
Miniature Gang Channel
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Service Temperature 900 F
Nut Material Carbon Steel
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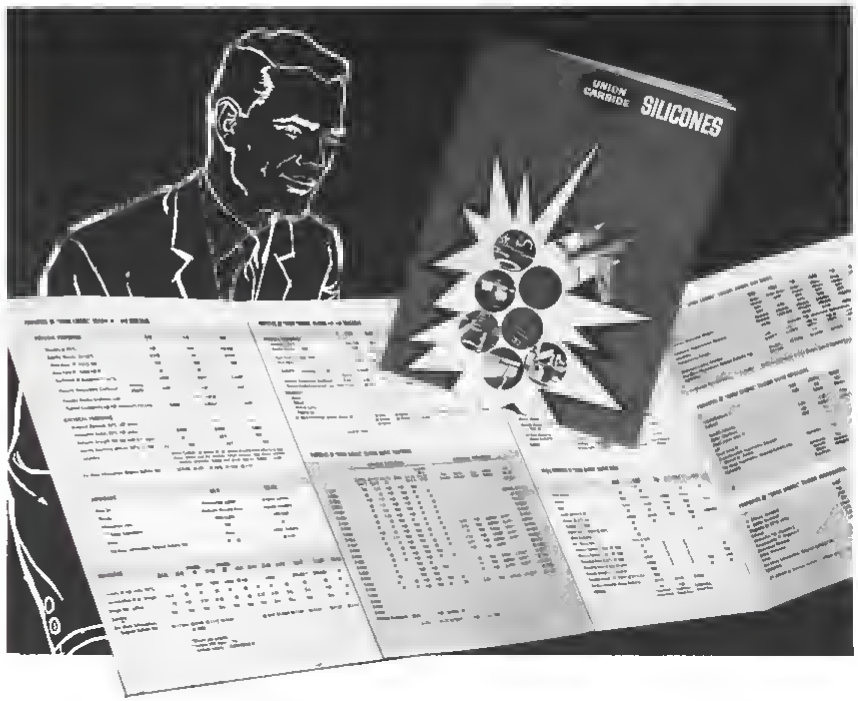
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The SIXTH ANNUAL ISSUE of the AVIATION WEEK BUYERS' GUIDE contains all the information a buyer needs to locate a source of supply for the product he wishes to purchase. Compiled in a logical order of reference sequence, this GUIDE is a source of information on products, manufacturers, distributors and military markets in the aviation industry.

If you are Buying

refer to the alphabetical PRODUCT INDEX to find the page number of each specific product with its manufacturers Types of one product appear as sub heads under the pertinent product heading and are indicated after each manufacturer's address For the closest source of supply, select your local distributor from the DISTRIBUTORS' INDEX

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If you are Selling

you will find the name of buyers of complete systems and components for the military services and the commercial airline in the MILITARY & TRANSPORT section

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SECTIONS OF THE GUIDE

PRODUCT INDEX

An alphabetical index of all the products listed in the GUIDE indicating the page on which is found the manufacturers of the product in which you are interested.

PRODUCT LISTINGS

Divided into five separate categories of related interests, this section contains all the products common to the aviation industry

A: AIRCRAFT—Products that are installed either complete or as major systems in an airplane Powerplants and such major components as seats or control assemblies are to be found here

B: SPACE VEHICLES & MISSILES—Products similar to those in category A, but applicable specifically to missiles Specialized supporting equipment is also listed, but common support items are not included

C: AVIONICS—The specialized equipment in this category include all the common parts—tubes, transistors, switches and rheostats—plus the large radars and computers, fire control systems and specialized units that extend man's knowledge and control of a weapon

D: SUPPORT EQUIPMENT & SERVICES—The increasing importance of the task of support of a weapon system is recognized by setting these items apart in a category of their own, including all the hardware items, fasteners, raw materials and services that go into support functions

E: AIRLINE AND AIRPORT EQUIPMENT—Listed are the hundreds of companies small and large that sell transportation of people and cargo the manufacturers of large fixed items such as hangars and runways and lighting systems and services of airport contractors

MANUFACTURERS & DISTRIBUTORS INDEX

An alphabetized list of manufacturers whose products are featured in this GUIDE begins on page 10. A similar listing of distributors serving the aircraft industry begins on page 346

MILITARY & TRANSPORT

A section devoted to the general procurement policies of Department of Defense Agencies, a listing of the Air Transport Purchasing Committee and FAA Repair Stations

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An alphabetical listing of all advertisers in the GUIDE indicating the page number of their ad will be found on page 360

Mid-December, 1960

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General Procurement Policies of DOD Agencies

Methods of Purchase

Purchases are made either by formal advertising or under certain specified conditions, by negotiation Formal advertising is conducted in strict accordance with prescribed procedures. A date and hour for bid opening is set in advance, and bids are publicly opened and recorded at that time. Award is made to the responsible bidder whose bid conforming to the Invitation for Bids, is most advantageous to the Government, price and other factors considered Upon award, the accepted bid becomes a legally binding contract

To provide a method of procurement for the armed services when formal advertising does not meet their needs, the Armed Services Procurement Act sets forth conditions permitting procurement by negotiation The experimental, developmental, or research nature of the item the urgency of the requirement the interest of national defense or industrial mobilization or other considerations covered by these conditions may authorize the contracting officer to select this method The use of the negotiation method does not by any means preclude competition It is the policy of the Department of Defense under negotiated procurement to assure full and free competition consistent with the requirements of the procurement by obtaining proposals from qualified sources The normal negotiation is publicized in advance competitive proposals are encouraged and results of the award are made known publicly Award is made in the best interest of the Government, considering price, delivery, quality of product and other factors, on the basis of original proposals or as a result of further negotiations with the firm or firms that submitted the most acceptable proposals

General Instructions For Bidding (Under Formal Advertising)

Bids should be filled out signed, and submitted in accordance with the instructions accompanying the Invitation for Bids The utmost care must be used in verifying all entries prior to submission of your bid to the purchasing office Mistakes discovered after the opening of bids can be very costly to the bidder since the bid as submitted becomes a binding contract upon award In preparing a bid the bidder must watch for special conditions relating to materials packing packaging, and delivery, which may be included in the Invitation for Bids

Any bid which does not conform to the essential requirements of the Invitation for Bids will be rejected All bids may be rejected by the contracting officer (1) when rejection is in the interest of the Government or (2) when he finds that the bids are not reasonable, or were not independently arrived at in open competition, or are collusive, or were submitted in bad faith Neither telegraphic nor alternative bids will be considered unless authorized by the Invitation for Bids

Bids must be submitted in sufficient time to reach the designated office prior to the time fixed for opening Bids that arrive after the hour set for opening are late bids and are given consideration only if received before award has been made and if the failure to arrive on time was due solely to a delay in the mails for which the bidder was not responsible as determined by the Government It is important to affix sufficient postage as purchasing offices will not accept mail on which postage is due

Types of Contracts

The fixed-price contract is generally used for both formally advertised and negotiated procurements Variations of the fixed price contract are employed in negotiated contracts to provide for price redeterminations where the performance of the contract may involve large contingencies or uncertainties in costs such as first time production runs. Cost reimbursement-type contracts are reserved for certain limited situations and may be awarded with or without a fee. Cost-plus-a-percentage-of-cost contracts are prohibited by law Letter contracts are preliminary contracts which enable a contractor to commence work pending the negotiation and execution of the definitive contract They are used only in emergencies or under unusual circumstances requiring maximum reduction of procurement leadtime

Payment of Invoices

Payments are made in accordance with the provisions of each contract Invoicing and payment clauses of contracts must be read carefully to make sure that invoices are properly executed and that they are submitted at the right time and to the right office Government regulations, which protect the taxpayer, require that the contractor submit a bill that is accurate in all respects. When obligations under the contract are fulfilled and invoices properly submitted, the contractor will be paid promptly

Delay in payment of invoices may be caused by incorrect computations, failure to submit inspection reports, shipments made without inspection incorrect citation of firm name on contracts or other failure to comply with contract requirements

Government Financial Assistance

Contractors are expected to be fully qualified and competent to perform the contract in all respects including financial

Some contracts may cause a significant drain on a contractor's working funds Thus, it may be in the best interest of the Government to provide financial assistance This assistance may take the form of a loan guarantee progress payments advance payments, or, in appropriate cases a combination of two or more of these A brief description of each type is set forth below The descriptions are not complete and it is recommended that specific financing problems be discussed with the contracting officer

Guaranteed Loans popularly known as "V" Loans, are loans made by private banks to contractors, repayment of which is partially guaranteed by a military department Procedures have been established whereby the private bank of the contractors' choice may apply to the Federal Reserve bank of its district for the guarantee of the loan

The Federal Reserve bank makes any necessary credit investigation and forwards the application with a recommendation to the military department primarily interested The military department after determining the eligibility of the contractor may authorize the Federal Reserve bank to issue a guarantee of the loan on its behalf The loan is made and administered by the lending bank

Guaranteed Loans are an especially suitable contract financing device for subcontractors

Progress payments are predelivery payments based on a percentage of costs incurred, either of total costs or of direct labor and material costs Progress payments in contracts for construction, shipbuilding, and ship repair are based on estimated percentages of physical completion Progress payments under contracts awarded after formal advertising will be made only if the Invitations for Bids provide for such payment In negotiated procurements contractors wanting progress payments should, in order to receive consideration so notify the contracting office when submitting proposals.

Advance payments are payments made to a contractor prior to and in anticipation of future delivery or other performance of a contract With certain exceptions, provisions for advance payments will not be approved unless no other means of adequate financing is available to the contractor

Subject to the above considerations, the need for reasonable progress payments or advance payments is not regarded as a handicap or adverse factor in the awarding of contracts

In addition, the Small Business Administration is authorized to grant loans to small business concerns to finance plant construction, acquisition of equipment, and supply working capital. Such loans may be made directly by the Administration or in cooperation with banks or other lending installations The SBA provides a valuable service to small business by making available to them technical and managerial aids and publications in the fields of procurement, business management, operation and maintenance of equipment, and opportunities for developing and selling new products.

Inspection and Quality Control

Before material can be accepted and paid for by the military departments, it is usually inspected by a representative of the Government to determine whether it conforms in all respects to the requirements of the contract. The place of inspection is provided for in the contract and generally will be either (1) the place of manufacture, (2) the point of delivery, or (3) destination Inspection of components, subassemblies or end items does not relieve the contractor of the responsibility of meeting all contract requirements (including material specifications packaging and packing)

The increasing use of quality control techniques by industry is recognized by the military departments Military inspectors may consider the use of such techniques by a contractor in determining whether Government standards are being met

Bid, Performance, and Payment Bonds

Bids bonds accompany bids and represent a guarantee by authorized sureties that the bidder will, within the time specified enter into a contract and give proper bond for its performance Bid bonds are not required unless specified in the Invitations for Bids They may be required by the Government only when the contract to be entered into is to be supported by a performance bond or by performance and payment bonds

Performance bonds secure the performance and fulfillment of all the terms and conditions contained in the contract The Miller Act (40 U S C 270a-270e), as amended, requires that performance bonds be furnished on lump sum construction contracts exceeding $2,000 in the amount to be performed within the United States In areas other than construction, it is not the usual policy of the military departments to require performance bonds If a performance bond is required the Invitation for Bid or Request for Proposal will so state, together with the amount to be required

Payment bonds secure the payment of all persons supplying labor and material in the prosecution of work provided for in the contract. Payment bonds are usually written in conjunction with performance bonds Payment bonds are required on fixed price construction contracts exceeding $2,000 On contracts other than construction, payment bonds are used sparingly If a payment bond is required the Invitation for Bid or Request for Proposal will so state, together with the amount to be required

Classified Contracts

A classified contract is any contract that requires or will require access to classified information by the contractor or his employees in the performance of the contract, even though the contract document itself may not be classified

Contractors seeking to participate in classified prime or subcontracts are required to have, or to be granted, a facility security clearance in order to be eligible for such participation

Action to clear a contractor's facility for participation in a prime contract is initiated by contracting officers of the military departments Requests for facility security clearances of subcontractors are submitted by the prime contractor

A facility security clearance granted to a contractor is applicable to any prime or subcontract of equal classification or less and is binding upon all procuring activities of the military departments as well as all Department of Defense prime contractors In addition all contractor personnel who require access to classified information must be granted personnel security clearances Clearances remain in force as long as there is a need for such clearances or until revoked for security reasons

Complete procedures are contained in the Department of Defense "Industrial Security Manual for Safeguarding Classified Information" Copies of this manual are for sale by the Superintendent of Documents, U S Government Printing Office, Washington 25, D C price, 30 cents

Specifications and Standards

Most supplies used by the military are purchased on the basis of Federal or military specifications which describe quality size, performance and other features of the item to be purchased and state requirements for inspection testing, packaging and packing When the specifications for an item being purchased are not included in the Invitation for Bids, bidders should apply to the contracting office issuing the Invitation for Bids or to such other source as may be designated in the Invitation for Bids

Indices of military specifications and standards may be purchased from the Superintendent of Documents Government Printing Office, Washington 25, D C These indices list specifications by item and by number and indicate for each the responsible military department (and technical service or bureau)

Qualified Products List

Certain specifications contain a "qualification test requirement," which means that a manufacturer's product must have passed certain tests listed in the specification Products which have passed the qualification tests are listed on the Qualified Products List (QPL) for that specification, and the manufacturer is assured that he will be allowed to compete for future procurements of the product

When a product to be purchased is included in a Qualified Products List, this will be so specified in the Invitation for Bids, and only those bids offering products which are on the list or have been approved, prior to the time set for the opening of bids for inclusion thereon can be considered

The following criteria are considered in determining whether the qualification test requirement is to be included in a specification

a. The time required for testing after award would unduly delay delivery of the supplies being purchased
b. The cost of repetitive testing would be excessive
c. The tests would require expensive or complicated test apparatus not commonly available
d. The interest of the Government requires assurance, prior to award, that the product is satisfactory for its intended use
e. The determination of acceptability would require performance

data to supplement technical requirements contained in the specification

Where a Qualified Products List is established, manufacturers are encouraged to submit samples of their products for test and approval and inclusion on the QPL, since the lists are always open for inclusion of products from additional sources. Each specification requiring qualification contains instructions for the submission of products for such testing.

Agents or Contractors' Representatives

It is not necessary to engage any person or selling agency to obtain Government business although some concerns do so. Bona fide representatives are permissible. The 'Covenant Against Contingent Fees' clause, which is included in all defense contracts is a warranty by the contractor that it has not employed or retained any person or selling agency "to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage or contingent fee." However, the warranty also provides that 'bona fide employees or bona fide established commercial or selling agencies maintained by the contractor for the purpose of securing business," even though paid on one of the above bases, may properly represent a firm in obtaining Government contracts. Breach of the warranty contained in the covenant may result in an annulment of the contract or the recovery by the Government of the amount of the fee paid.

Inquires will be made of, and written representation will be secured from, prospective contractors as to whether they have employed or retained any company or person (other than a full-time employee working solely for a prospective contractor) to solicit or secure the contract, and the contractor shall agree in writing to furnish information relating thereto as may be required by the contracting officer. DD Form 119 is used as a basis for obtaining this information and a copy of this form may be obtained from any military contracting officer.

Gratuities

Certain practices that may be condoned in private business, such as offering gifts or granting gratuities and favors must be avoided in dealing with the Government. Military procurement is subject to the provisions of public laws which prohibit the offering of such gratuities to, or their acceptance by, Government personnel charged with the responsibility of negotiating or administering Government contracts. Violations may result in criminal prosecution and, under the provisions of the "Gratuities" clause incorporated in defense contracts, in the termination of the contract. Kick backs' by subcontractor to prime or higher tier subcontractors are also forbidden by law if the prime contract is negotiated.

When entering into any contract involving the employment of labor it is the Government's policy to include a provision obligating the contractor not to discriminate against any employee or applicant for employment because of race, religion, color or national origin. The clause imposes upon the contractor the responsibility for including the provision in most subcontracts. It is the contractor's and, in appropriate cases the subcontractor's contractual obligation to maintain a labor policy consistent with the requirements of this provision.

Definition of Small Business

For those procurements on which preferential treatment of bids from small business concerns are authorized by the Department of Defense, a bidder must conform to the small business definition in order to receive preference. Congress has given the Small Business Administration the sole authority for the determination as to what concerns shall be considered small business. Use of the following definition of "small business" is mandatory for all procurement agencies in the Department of Defense.

General definition. A small business concern is a concern that (1) is not dominant in its field of operations and with its affiliates employs fewer than 500 employees or (2) is certified as a small business concern by SBA. SBA has authority to establish industry standards.

Dominance in field of operation. A concern is 'not dominant in its field of operation' when it does not exercise a controlling or major influence in an area of business activity. In determining whether dominance exists, consideration shall be given to all appropriate factors including volume of business, number of employees, financial resources, competitive status or position, ownership or control of materials, processes, patents and license agreements, sales territory, and business activity.

Affiliates. Business concerns are affiliates of each other when either directly or indirectly (1) one concern controls or has the power to control the other, or (2) a third party controls or has the power to control both. In determining whether concerns are independently owned and operated and whether or not affiliation exists considerations shall be given to all appropriate factors including common ownership, common management, and contractual relationships.

Number of employees. In connection with the determination of small business status except as SBA otherwise determines in a particular industry or part thereof, 'number of employees' means the average employment of any concern and its affiliates based on the number of persons employed during the pay period ending nearest the 15th of the 3d month in each calendar quarter for the preceding four quarters. If a concern has not been in existence for four full calendar quarters 'number of employees' means the average employment of such concern and its affiliates during the period such concern has been in existence based on the number of persons employed during the pay period ending nearest the 15th of each month.

Dealer as small business concern. A dealer who submits bids or offers in its own name, but who proposes to furnish a product not manufactured by itself shall be considered to be a small business concern when, in addition to meeting the general definition, it agrees to furnish in the performance of the contract products manufactured or produced in the United States, its Territories or possessions by small business concerns.

Small business certificate. A small business certificate is a certificate issued by SBA pursuant to the authority contained in sections 203 and 212 of the Small Business Act of 1953, as amended, certifying that the holder of the certificate is a small business concern for the purpose of Government procurement and in accordance with the terms of the certificate.

Contracting officers accept at face value (a) a small business certificate issued by the SBA, or (b) a written statement by the bidder that it is a small business concern in accord with the above definition. In the event such a statement is questioned prior to award of the contract, the contracting officer will refer the matter to the SBA for a ruling, and this ruling will be accepted as final.

Any change in the definition of small business will be published by the SBA in the Federal Register, and business firms desiring current information of their status as small business should contact the nearest regional office of the Small Business Administration.

Each military department has an active and continuing program to afford small business concerns an equitable opportunity to compete for defense procurement. In addition, concerns classified as small business are granted certain preferential treatment in some instances in the award of military contracts. Selected procurements may be set aside in whole or in part for exclusive participation of small business.

In the case of equal low bids submitted by a large concern and a small business concern, preference in award is generally given to the small concern. However, if the large business concern will perform the proposed contract in an area of substantial labor surplus, it will receive preference over a small concern which will not perform the contract in a surplus labor area. If equal low bids are submitted by a small business concern and a large business concern, both of whom have agreed to perform the proposed contract in a labor surplus area, preference in award will go to the small business concern.

Liaison With the Small Business Administration

The military departments work closely with the Small Business Administration to maintain a cooperative program to increase small business participation in defense procurement. SBA representatives and military contracting officers jointly screen and select procurements that can be set aside for exclusive small business participation. The Administration has also the authority to certify the competence as to capacity or credit of an apparent low small business bidder or offeror whose competence on a particular procurement is being questioned by the contracting officer. Such certification when made by the SBA is accepted as conclusive by the contracting officer. The SBA reviews military department bidders' lists and endeavors to discover additional potential small business suppliers for such lists.

Subcontracting

Many small firms seeking defense work find it advantageous to investigate subcontracting possibilities. There are certain major items of defense procurement, such as aircraft, ships, and combat vehicles, which generally are unsuited to the production facilities of small firms. This does not exclude small business from participation in such procurement programs, however, since much of the work under these contracts is performed by small firms as subcontractors and suppliers. To insure that appropriate consideration is given to small business concerns as potential subcontractors, each fixed-price and cost reimbursement type contract in excess of $5,000 contains a contractual clause requiring the prime contractor to make the maximum practicable utilization of small business concerns as subcontractors. Specific procedures to be followed by concerns interested in obtaining military subcontract work are contained in the Army, Navy, and Air Force sections of this publication. Subcontractors are selected by the prime contractors and deal directly with them, rather than with the Government. However, the Army, Navy, and Air Force have made agreements with their larger contractors wherein each contractor conducts a program designed to provide small business concerns with an equitable opportunity to compete for subcontracts and purchase orders for items within their capabilities. This is known as the Defense Small Business Subcontracting Program, and it has been entered into not only by the large prime contractors of the military departments but by many of their major subcontractors as well.

For subcontracts, concerns should apply directly to the prime contractors, furnishing information on plant facilities, production experience, present products, personnel and financial status. This program is mandatory for any operator or contractor or subcontractor awarded a contract or subcontract for more than one million dollars.

The names of major prime contractors are listed in the Department of Commerce Synopsis. Small business specialists at military procurement or contract administration offices are also able to assist in locating subcontracting opportunities.

The Army, Navy, and Air Force sections of this booklet describe more particularly the assistance available to small concerns interested in becoming subcontractors or suppliers.

Synopsis of Proposed Procurements

From Monday through Friday of each week, there is published in Chicago by the Department of Commerce the 'Synopsis of U. S. Government Proposed Procurement, Sales and Contract Awards.' Individuals and interested business firms may subscribe to this publication for $10 per year. A check or money order payable to the Treasurer of the United States should be mailed to the U. S. Department of Commerce, Administrative Service Office, Room 1300, New Post Office Building, 433 West Van Buren Street, Chicago 7, Ill. The Synopsis is also available for inspection at each of the 33 field offices of the Department of Commerce and at approximately 700 cooperating offices including some chambers of commerce. Most unclassified proposed procurements of the purchasing agencies of the Department of Defense, whether being procured by formal advertisement or by negotiation, are listed. Once a week, this publication also lists the awards of contracts in excess of $25,000 that have been made. Other information of value to the prospective contractor or subcontractor will be found in this publication.

Procurement Information Office

If the supplies or services which a firm is qualified to furnish are not listed in this pamphlet and the information cannot be obtained in the local area, an inquiry should be addressed to the Central Military Procurement Information Office, Office of the Assistant Secretary of Defense (Supply and Logistics), the Pentagon, Washington 25, D. C. That office was established in 1949 by the Secretary of Defense to act as a guide service to businessmen in their dealings with the military departments and can assist in locating the offices which buy particular products or services, and will make appointments in the Washington area with the persons in the military departments who can best answer specific inquiries.

The Procurement Information Center, Room 732, Old Post Office Building, 12th Street and Pennsylvania Avenue, NW., Washington 25, D. C., receives copies of all formally advertised Invitations for Bids and abstracts of awards from Army and Air Force procurement activities.

Research and Development

The Department of Defense benefits from the ingenuity and know-how of American industry, educational institutions, and nonprofit research organizations, by obtaining, through research and development contracts, new concepts and ideas essential to its present and future requirements.

The Army, Navy, and Air Force are fully aware of the importance of locating and utilizing technically competent research and development organizations. Each recognizes that such competence is not necessarily determined by the size of the organization and has established programs and procedures to insure that all organizations, regardless of size, are given every opportunity to submit research and development proposals. Contracts are awarded to those firms which have the highest competence in the specific branch of science or technology required for the successful conduct of the particular work involved.

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Military Sales: Where to Go, Whom to See

WHERE AIR FORCE PROCUREMENT TAKES PLACE

Procurement authority for meeting Air Force material requirements is vested in the Commander Air Materiel Command Wright-Patterson Air Force Base, Ohio Regardless of which air command (Strategic Air Command Air Training Command Air Research and Development Command, etc) does the actual purchasing the contracting procedures are those set forth in the Air Force Procurement Instruction published by the Air Materiel Command

Contracts and purchase orders placed directly by the Air Force fall into three groups

Group 1, ARDC Procurement. Research, basic and applied and development. Procurements in group 1 are handled by ARDC Centers

Group 2, Central Procurement. Air Weapons, support equipment, and services. Procurements in group 2 are handled in the United States (less Hawaii) by Air Materiel Command at the Aeronautical Systems Center Wright-Patterson Air Force Base, Ohio by the Ballistic Missiles Center, Inglewood, California, by the Electronic Systems Center, Bedford, Mass., by the Dayton Air Force Depot, Gentile Air Force Station Ohio and by nine Air Materiel Area headquarters covering the country. These contracts are administered by administrative contracting officers assigned by the Air Materiel Area Headquarters or by Air Force district offices under those headquarters

Group 3, Base Procurement. Supplies and services required for daily operations of Air Force bases, world wide. Procurements in group 3 are handled at each of the 170-odd bases in the United States (less Hawaii) by base procurement officers. Normally, these contracts or purchase orders are administered by the contracting officers

ARDC PROCUREMENT

The Air Research and Development Command procures Research and Technical Development Research and development projects differ widely from production or supply requirements. Drawings, specifications and sample items are generally not available. Qualitative requirements are frequently more descriptions of desired results and many projects consist of theoretical or experimental studies. Therefore, ARDC cannot always use the standard procurement procedures found in other military agencies which procure production material.

A listing of industrial and scientific agencies qualified to participate in research and development projects is maintained in a specialized file at the various Centers. This file also contains sources of supply for specialized technical and laboratory equipment. Individuals, groups, scientific and industrial organizations interested in participating in the R & D program should complete ARDC forms 220 and submit sufficient copies to Hq ARDC attn RDMKS to allow dissemination of a copy to each ARDC Center.

To obtain more detailed information concerning ARDC procurement a personal call or visit to a Contractor Relations Office at Headquarters or one of the Centers can accomplish the same purpose. If you are not located near Hq ARDC or an ARDC Center it is possible for you to obtain additional information by visiting any one of a number of Air Force Liaison Offices located in many cities throughout the United States. While these representatives of ARDC do not maintain source files or Contractor Relations Offices, qualified technical personnel are available for discussion of your technical capabilities and assistance in the procedures to be followed.

Contractor Relations

The Contractor Relations Office, which is a part of the Procurement organization established to provide reception and proper guidance to the initial point of entry for all potential and new contractors. After the initial contact and discussions have been completed with the responsible personnel at the Center or Headquarters, ARDC it is not necessary to clear subsequent visits through this office. However, to assure that the concerned Center or Headquarters personnel are available, or to avoid long delays for interviews, contractors should previously arrange for definite appointments either direct or through the Contractor Relations Office.

Contractors should understand that security regulations prohibit discussion of classified information without prior security clearance. Action to obtain the necessary clearance may be initiated with the Provost Marshal office at any ARDC installation.

ARDC CENTERS

Hq Air Research and Development Command (Hq ARDC), Andrews Afa Force Base Washington 25, D C Telephone Redwood 5-6000
Commander—Lt. General B. A. Schriever
Vice Commander—Maj. General J. Ferguson
Deputy Commander for Research—Maj. Gen. M. Cooper
Deputy Commander for Resources—Col. S. Bishop
Director of Procurement—Colonel J. B. Pendgrass
Deputy Director of Procurement—Mr. R. E. Mindel
Executive for Small Business—Mr. J. C. Elden (RDMKS Ext. 81100)
Assistant for Procurement Sources—Mr. L. E. Olson (RDMKS Ext. 851111)
Chief, Contractor Relations Division—Major J. Grimes (RDMKS Ext. 851121)

Air Force Office of Scientific Research (AFSOR) Washington 25, D. C. Telephone Lincoln 6-5650
Commander—Colonel A. Gagge
Director of Procurement—Lt. Col. A. L. Thayer
Contractor Relations & Sources and Small Business—Mr. S. Milasavsky (SRKF Ext. 2811)
Explo a ory research in aeronautical sciences, bio sciences, and physical sciences

Arnold Engineering Development Center (Arnold Center) Arnold Air Force Station Tennessee Telephone GL 5-2611
Commander—Brig. Gen. Herman A. Saussey
Director of Procurement—Mr. James Fuqua
Contractor Relations and Sources and Small Business—Mr. J. Mowery (AEKS Ext. 2721)
Contracting Officer—Mr. C. W. Mastbrook
Aerodynamics propulsion, high speed gas dynamics supersonic and hypersonic aircraft and missiles

Air Proving Ground Center (APGC) Eglin Air Force Base Florida. Telephone: Eglin APB Fla
Commander—Maj. Gen. Robert H. Terrell
Director of Procurement—Lt. Col. C. Duke (Ext. 292611)
Contractor Relations Sources and Small Business—Mr. J. V. Latwish (PGK2 Ext. 292231)
Aircraft weapons ammunition rockets bombs fire control components and systems Target and Sonar systems

Air Force Command & Control Development Division (AFCCDD) L. G. Hanscom Field, Bedford Massachusetts. Telephone Crestview 4-6100
Commander—Maj. Gen. K. B. Benjamin
Director of Procurement—Mr. W. J. Irwin
Contractor Relations Sources and Small Business—Mr. J. Costas (CCKB Ext. 2246)
Development and test of electronic systems for command and control of Air Force operations applied research and human engineering

Air Force Flight Test Center (AFFTC) Edwards Air Force Base California. Telephone Edwards Clifford 9-2111
Commander—Brig. General J. W. Carpenter III
Director of Procurement—Lt. Col. James Venable Jr.
Contractor Relations and Sources—Mr. Thompson (FTKSA Ext. 29431)
Small Business Specialists—Mr. Peterson (FTKB Ext. 273611)
Testing of aircraft systems stable testing of missiles and rockets research and development to support these tests, applied research for rocket propulsion

Air Force Missile Test Center (AFMTC), Patrick Afa Force Base, Florida. Telephone: Ulysses 7-7231
Commander—Maj. Genera L. Davis
Director of Procurement—Col. P. R. Cornwall
Contractor Relations and Sources and Small Business—Mr. Swanson (MTKS Ext. UL 7-61531)
Test range instrumentation

Air Force Special Weapons Center (AFSWC) Kirtland Afa Force Base New Mexico. Telephone: Chapel 1-1711
Commander—Maj. General C. M. McCorkle
Director of Procurement—Lt. Col. P. M. Packard
Contractor Relations Sources and Small Business—Mr. N. Nickerson (SWKS Ext. 39661)
Air Force components and equipment related to atomic weapons

Air Force Missile Development Center (AFMDC) Holloman Air Force Base New Mexico. Telephone: Bradley 3-6511
Commander—Maj. Gen. Wm. M. Castleberry
Director of Procurement—Lt. Col. Turner
Contractor Relations, Sources and Small Business—Mr. D. P. Nathanek (MDKB Ext. 67031)
Guided missiles, target drones space biology test range instrumentation

Rome Air Development Center (RADC) Griffiss Air Force Base, Rome, New York. Telephone: Rome FF6-3200
Commander—Maj. General D. P. Gaoul
Director of Procurement—Col. R. Brohanna
Contractor Relations Sources and Small Business—Mr. J. Valle (RCKS Ext. 2204)
Ground electronics systems radio automatic flight missile guidance, data transmission, radio and wire communications, air navigation and terminal aids counter measures

Wright Air Development Center (WADD) Wright-Patterson Air Force Base Ohio. Telephone Cleveland 3-7211
Commander—Maj. Gen. J. Holzapple
Director of Procurement—Lt. Col. T. Watkins
Contractor Relations and Sources—Miss B. J. Weisbrod (WWKAR Ext. 39250)
Small Business Specialists—Mr. L. Grise (WWKA Ext. 182161)
Aircraft and missile components guidance & control systems, propellers, power plants ground equipment airborne equipment, aero medical equipment, airborne signal center and materiel

San Antonio Research and Development Procurement Office (WADD) Box 63 Lackland Air Force Base, Texas. Telephone Whitest 3-3611
Chief Procurement Office—Mr. M. V. Pfister
Contractor Relations Sources and Small Business—Miss Wiartat Brill (WWKLS Ext. 2113 25641)
Personnel research, research and development programs support to the School of Aviation Air University Command and the Aeronautical Laboratory Alaskan Air Command

The Small Business Program

As part of the Small Business Program of the Department of the Air Force Small Business Specialists have been assigned to all ARDC Center procurement activities to assist technically competent small research and development concerns in becoming listed in the ARDC Source System. Small Business Specialists will also function in the ARDC Regional Offices. In order to include a small business potential source in the ARDC Source System established in the Contractors Relation Branch at each center ARDC Source Form 220 should be used. After it is accomplished it should be reproduced so that two (2) copies of it plus a brochure on your concern can be sent to Headquarters ARDC Attn RDSKS. Duplicate copies should also be sent to the Contractors Relation Branch of each ARDC Center Small Business policies of the Department of the Air Force are developed by the USAF Small Business Adviser in cooperation with the Small Business Administration and other Governmental Agencies whose activities affect the Small Business Program. The ultimate objective is to assist small concerns in securing a fair share of defense procurement and thereby comply with the policy of the Congress viz "that a fair proportion of the total purchases and contracts for supplies and services for the Government shall be placed with small business concerns." (Armed Services Procurement Act of 1947 Public Law 413, 80th Congress)

ARDC Regional Offices & Liaison Offices

Conveniently located throughout the U. S., Regional Offices and Liaison Offices are available to serve your local technical contacts and information.

While they do no procurement the office nearest you may be visited or contacted directly to obtain guidance on ARDC policies and procedures, or as a preliminary step in becoming better acquainted with the activities of ARDC. Such local contacts can minimize the cost of getting the assistance needed.

Staffed with technically qualified engineers, these offices are available to discuss your research and development projects and potential and to otherwise assist you.

A complete list of addresses follows. Please contact only the ARDC Regional Office or Liaison Office nearest your plant location. Do not send source information to these locations unless requested to do so.

ARDC Office Langley Aeronautical Laboratory (NACA) Langley Air Force Base, Virginia
ARDC Office Naval Air R & D Activities Command Johnsville, Pennsylvania
ARDC Office Massachusetts Institute of Technology 66 Albany Street, Cambridge, Massachusetts
ARDC Office Bell Telephone Laboratory, Whippany Laboratory, Whippany, New Jersey
APDC Regional Office, 6331 Hollywood Boulevard, Los Angeles 28, California
Small Business Advisor—Mr. W. Stalew
Tel. Hollywood 7-5171
ARDC Office, Ames Aeronautical Laboratory (NACA) Moffett Field, California
ARDC Office, San Francisco Bay Area, 1176 Los Altos Ave., Los Altos, California
ARDC Office, Naval Missile Center, Point Mugu, California
ARDC Office, Naval Ordnance Test Station, China Lake, California
ARDC Office, c/o Boeing Airplane Company, Seattle 24, Washington
ARDC Office, Aberdeen Proving Ground, Aberdeen Proving Ground, Maryland
ARDC Regional Office, 140 Broadway, New York 13, New York
Small Business Advisor—Mr. H. Siegelaub
Tel. Rector 2-8000, Ext. 700
ARDC Office, Lewis Research Center, NASA, 21000 Brookpark Road, Cleveland 11, Ohio
ARDC Office, Redstone Arsenal, Redstone Arsenal, Alabama
ARDC Office, Room 615, La Salle Bldg., 39 South La Salle Street, Chicago 3, Illinois
Small Business Advisor—Mr. D. C. Stevenson
Tel. Financial 6-9181
ARDC Regional Office, Room 3016, Main Navy Building, Washington 25, D. C.
Small Business Adviser—Mr. W. Greve
Tel. Oxford 6-2671

European Office, ARDC

The European Office, Air Research and Development Command, functions as a service organization for all of the other Centers of the Command outlined in the foregoing paragraphs. Its scientific interests, therefore, include all of those enumerated. While EOARDC is primarily interested in sponsoring basic or fundamental scientific research, it does enter into development contracts for materials and equipment based upon USAF and ARDC Center requirements.

A secondary but highly important service performed by EOARDC is promoting the exchange of scientific information between the United States and the free European scientific communities.

CENTRAL PROCUREMENT

To supply the Air Force with the right equipment at the right times and places throughout the world requires a far-flung organization.

The workload of Air Materiel Command is decentralized to its Contact Management Regions. Air Materiel Areas, Centers and Depots. They perform the operational work, providing supply, maintenance, procurement and reclamation of Air Force property. They also look after disposal of Air Force surplus as well as specialize in specific weapon systems and certain classes of supply, which they buy for the entire Air Force.

These buying agencies, their locations and the items they specialize in follow:

This decentralized procurement responsibility is not to be confused with local purchase or base procurement responsibility which is that procurement of supplies and services required to support the particular installation and related to a great extent to items of a housekeeping nature.

Aeronautical Systems Center, Wright-Patterson Afa Force Base, Ohio
Complete aircraft, missiles and aerial targets. Complete aircraft engines (combustion and jet) aircraft navigation, meteorological flight, time measuring, testing and engine instruments, automatic pilot mechanisms and airborne gyros, aircraft wheels and brakes, tires and tubes, airborne radio and radar equipment, photographic equipment, propellers and propeller accessories, miscellaneous aircraft, nacelles, spares and components, gas turbines, airborne type bombing and gunnery equipment, fire control systems and equipment, launchers, rockets and pyrotechnic weapons, warheads and explosives, maintenance training devices, aerial spares and ground support and tools/test equipment in support of the foregoing, research and development and service test, long stock listed items.

Ballistic Missiles Center, Air Force Unit Post Office, Los Angeles 45, California.
Ballistic missiles, space vehicles and equipment and components peculiar thereto such as pumps, systems, guidance systems, related ground support handling equipment, initial spares, long lead time equipment, initial spares, tools, test equipment, etc.

Electronics Systems Center, L. G. Hanscom Field, Bedford, Mass.
Procurement of engineering, management and other services for Air Defense Systems such as SAGE, BEW, Iona White Alice and Ballistic Missile Early Warning System.

Middletown Air Material Area, Olmsted Air Force Base, Middletown, Pa. Attn: Directorate of Procurement and Production
Airframe structural components, C-46, C-119, C-123, C-124, H-5, H-13, H-19, H-21, H-34, H-37, L-16, L-19, L-20, L-21, L-26, L-27, T-37, T-38, guided missile components (Pritchard Stevedore) support aircraft and rocket engine parts, fuels, lubricants, oils, waxes and corrosion preventive compounds, chemicals and chemical products, gases, compressed and liquified, soft gas cylinders, miscellaneous instruments (other than GFAE) and laboratory equipment, aircraft meters and maintenance parts, parachutes, navigation and cargo, life saving equipment, clothing, textiles and materials, equipment (except single manager items) of Army, clothing and textiles, service and trade equipment, four preposition and aerial equipment.
Contractual maintenance and modification services for support for commodities listed above and aircraft and missiles and/or engines for which the installation has prime maintenance responsibility.

Mobile Air Material Area, Brookley Air Force Base, Mobile, Ala. Attn: Directorate of Procurement and Production
Airframe structural components and guided missile components support (F-80, F-105, B-66, SA-16, C-2, C-4, Juniter) aircraft air conditioning, pressurizing and breathing oxygen equipment, miscellaneous aircraft and engine accessories and components, mechanical power transmission equipment, containers and packaging materials, construction and building materials, prefabricated structures and scaffolding, hardware and abrasives, hand tools, alarm and signal systems, special industry machinery and equipment, except gas generating equipment, wire, cable, chain and fittings, pumps and compressors, refrigeration and air conditioning equipment, furnace, steam plant and drying equipment, valves, plumbing, heating and sanitation equipment, water purification and sewage treatment equipment, pipe, tube, fittings, lumber, millwork, plywood and veneer, ship and marine equipment, brushes, paints, sealers and adhesives, non-metallic fabricated materials, metal bars, sheets and shapes, raw, minerals and their primary products.
Contractual maintenance and modification services for support for commodities listed above and aircraft and missile and/or engines for which the installation has prime maintenance responsibility.

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Ogden Air Material Area Hill Air Force Base Ogden, Utah Attn Directorate of Procurement and Production
Airframe structural components IB-17 B-26, F-86 F-101, guided missile components (Bomarc, Snark, Goose Minuteman) support, engine parts, aircraft loading gear wheels and brakes tires and tubes inflow-and aircraft hydraulic vacuum and de-icing systems components (training aids and devices except airborne type) and items ammunition and explosives except Army Ordnance assigned items) ammunition maintenance and repair shop specialized equipment ammunition packaging and special containers laboratory equipment histological servicing Contractual maintenance and modification services for support for commodities listed above and aircraft and missile and/or engines for which the installation has prime maintenance responsibility

Oklahoma City Air Material Area, Tinker Air Force Base, Oklahoma City, Okla. Attn: Directorate of Procurement and Production
Airframe structural components IB-29 B-47 B-50 B-52, C-97 C-131, KC-135, guided missile components (Rascal, Quail, Hound Dog, Bullpup) support, miscellaneous engine accessories (aircraft) and maintenance parts aircraft engine cooling system components, aircraft engine air and oil filters, strainers and cleaners
Contractual maintenance and modification services for support of commodities listed above and aircraft and missile and/or engines for which the installation has prime maintenance responsibility

Rome Air Material Area Griffiss Air Force Base, Rome, N. Y. Attn: Directorate of Procurement and Production
Ground radio, radar and navigational equipment, meteorological equipment, instruments (except airborne) and supplies; ground communications equipment, structural and installation parts for communications equipment miscellaneous electrical power and distribution equipment photographic supplies; commercial electrical equipment and supplies lighting fixtures, airport, lighting fixtures and lamps (except airborne) electrical wire and cable
Contractual maintenance and modification services for support for commodity areas listed above Procurement of systems integration development, service test and similar functions assigned for implementation and operation of Electronic Support Systems (ESSP&S) Procurement of engineering and installation of ground electronics equipment, facilities and systems (GEEIA)

Sacramento Air Material Area McClellan Air Force Base, Sacramento, Calif. Attn: Directorate of Procurement and Production
Airframe structural components (C-121 F-80 F-86 F-94, F-101, F-104, F-105, T-6, T-28, T-33 RM-81) generators and generator sets, electrical, aircraft auxiliary fuel tanks and pylons except fixed type
Contractual maintenance and modification services for support for commodities listed above and aircraft and/or engines for which the installation has prime maintenance responsibility

San Antonio Air Material Area Kelly Air Force Base San Antonio, Tex. Attn: Directorate of Procurement and Production
Airframe structural components (B-36, B-58 B-70 C-45 C-131, F-102, F-106, L-5, T-29, T-34 WS-125A) aircraft engine fuel and electrical system components meters and converters electrical special weapons and equipment (atomic ordnance) hazard detecting instruments and apparatus aircraft electric lights and fixtures
Contractual maintenance and modification services for support for commodities listed above and aircraft and/or engines for which the installation has prime maintenance responsibility

San Bernardino Air Material Area Norton Air Force Base San Bernardino, Calif. Attn: Directorate of Procurement and Production
Airframe structural components (C-124 C-133) and guided missile components (Atlas, Titan, Thor) support Contractual maintenance and modification services for support for aircraft and missile and/or engines for which the installation has prime maintenance responsibility

Warner Robins Air Material Area Robins Air Force Base Macon, Ga. Attn: Directorate of Procurement and Production
Airframe structural components (B-45 B-57, C-47 C-54 C-117 C-118 C-130 and Douglas common) partial guided missile components, (Matador, Mace) support, weapons (guns, chemical and biological) (except Army Ordnance assigned items, bearings metal working rubber working and textile) industries machinery and woodworking machinery and equipment, centrifugals, separators pressure and vacuum fillers driers dehydrators and anhydrators, tires and tubes, except aircraft rescue and safety equipment.
Contractual maintenance and modification services for support of commodities listed above (bombsight gunnery and fire control systems and equipment and aircraft and missile and/or engines for which the installation has prime maintenance responsibility

Dayton Air Force Depot, Gentile Air Force Station Dayton, Ohio. Attn: Directorate of Procurement and Production
Airframe radio, radar and navigational equipment and components, airborne communications equipment electrical and electronic equipment, components, terminals terminal boards, connectors, fuses, lightning arrestors, capacitors, resistors, switches, aircraft breakers tubes, relays contactors, solenoids insulation, knobs, spinners, dials and plate-electron crystals, ordnance and shop test inspection equipment and maintenance parts, measuring tools inspection gages combination and miscellaneous instruments.
Contractual maintenance and modification services for support for commodity areas listed above (Except GFAE)

2709 AF Vehicle Control Group, Memphis Army General Depot, Memphis, Tenn. Attn: Directorate of Procurement and Production
Motor vehicles, trailers and cycles, tractors, vehicular equipment components gasoline reciprocating engines (except aircraft) and components diesel engines and components, engine fuel systems components, gun aircraft, engine electrical systems components, non-aircraft, engine cooling systems components, non-aircraft, engine air and oil filters strainers and cleaners, non-aircraft misc engine accessories non-aircraft gas generating equipment (ground construction mining excavating and highway maintenance equipment materials handling equipment firefighting equipment fabrication and fuel dispensing equipment electric vehicular non-aircraft lights and fixtures
Contractual maintenance and modification services for support for commodity areas listed above

Apply to the nearest Air Force Procurement District to have your firm placed on Bidders' lists. To obtain a copy of a specified bid of specifications however, apply directly to the purchasing office. Copies of current Invitations for Bids and Requests for Proposals, with specifications, are available for reference at Air Procurement District offices

CONTRACT MANAGEMENT REGIONS

Central Contract Management Region, Wright Patterson AFB, Ohio
Telephone Clearwater 5 7111
Commander Col Donald W Graham Ext. 5 2208
Deputy Col Duane M Wright Ext 5 8295
Eastern Contract Management Region Dimsted AFB, Middletown Pa
Telephone Whiting 4 5521
Commander Col Hugh J Mattis, Ext 6102
Deputy Col Henry J Taylor
Western Contract Management Region, Mira Loma AF Station Calif
Telephone Ovesland 5 9211 (Riverside)
Commander Col Gerald F Keeling Ext. 355
Deputy Col Robert J Walling Ext 356

AIR PROCUREMENT DISTRICTS

Central Contract Management Region

Chicago Air Procurement District, 5555 S Archer Ave., Chicago 38 Ill
Telephone Reliance 5 3000
Chief Col James R Garner Ext 282
Cleveland Air Procurement District, 313 St. Clair Ave., N. E., Cleveland 14 Ohio
Telephone Cherry 1 7900
Chief Lt. Col William P Abdallah Ext. 454
Dallas Air Procurement District 500 South Ervay, Dallas 1 Texas
Telephone Riverside 8 5611
Chief Lt Col Virgil H Stallings, Ext 2371
Dayton Air Procurement District, Bldg 70 Area C, Wright Patterson AFB, Ohio
Telephone Clearwater 3 7111
Chief Lt Col James R Forrestpe Ext 6 4131
Detroit Air Procurement District, 6233 Concord Ave., Detroit 11 Mich
Telephone Walnut 1 4721
Chief Lt Col Thomas H Mongi
Indianapolis Air Procurement District 1112 N Pennsylvania, Indianapolis 2 Indiana
Telephone Melrose 2 1551
Chief Lt Col Selden L Beird, Ext. 581
Deputy Capt Gene L Pelot
Milwaukee Air Procurement District 770 N Plankinton Ave, Milwaukee Wisc
Telephone Broadway 2 4343
Chief Lt Col Kenneth H Deaxt Ext 1
Deputy Major Robert B Hrask
St Louis Air Procurement District, 1114 Market St., St. Louis 1 Mo
Telephone Main 1-8100
Chief Colonel Herbert E Breuter, Ext 2555

Eastern Contract Management Region

Atlanta Air Procurement District 41 Exchange Pl., S E Atlanta 3 Ga
Telephone Jackson 2-4121
Chief Major Winston S Smith Ext 581
Boston Air Procurement District Boston Army Base, Boston 10 Mass.
Telephone Liberty 2 6000
Chief Colonel Ernest H Millet, Ext 853
Deputy Lt Col Charles N Keppler
Newark Air Procurement District, 218 Market St., Newark N J
Telephone Mitchell 3-3934
Chief Colonel Frederick W Toomey, Ext 181
Deputy Lt Col Frank W Nehsen Ext 182
New York Air Procurement District, 111 E 16th St., New York 3 N Y
Telephone Spring 7 9200
Chief Colonel Lawrence B Ocamb Ext 528
Orlando Air Procurement District, Orlando, AFB Florida
Telephone Garden 3 3561
Chief Lt Col Harold J Larsen
Philadelphia Air Procurement District, 1411 Walnut St Philadelphia 2 Pa
Telephone Locust 7 3000
Chief Colonel Jas K Warner
Deputy Major Joseph B Owen, Jr (Actg)
Richmond Air Procurement District Bell Blvd & Broad Rock Road P O Box 8848 Richmond 25, Va
Telephone Belmont 5 9841
Chief Major Michael J Tashjian, Ext 38
Rochester Air Procurement District 20 Symington Place P O Box 1645 Rochester 5 N Y
Telephone Fairview 8-7670
Chief Colonel Alexander S Young

Western Contract Management Region

Los Angeles Air Procurement District, 1206 S Maple Avenue Los Angeles 15 Calif
Telephone Richmond 9 4711
Chief Colonel John R Mayberry Ext 581
Deputy Lt Col Arthur L Singer
Ogden Air Procurement District Hill AFB Utah
Telephone Taylor 5-5215
Chief Colonel Frank L Tussey Ext 3502
Deputy Major Peter Sewa, Jr Ext 5728
Phoenix Air Procurement District, 2875 Sky Harbor Blvd., Phoenix Ariz.
Telephone Bridge 5 5951
Chief Lt Col Ralph W Rogers
Deputy Major James P Trapp
San Diego Air Procurement District, 3054 Rosecrans Pl San Diego 10 Calif
Telephone Academy 2 0591
Chief Lt Col Charles R Douglass, Ext 1
San Francisco Air Procurement District Bldg 1 Oakland Army Terminal West Grand Ave & Maritime, Oakland 14 Calif
Telephone Twin Oaks 3-4000
Chief Major Robert E Haile Ext. 2215
Deputy Major Stuart M Sharp Ext 2214

AF PLANT REPRESENTATIVE OFFICES

Central Contract Management Region

Allison Div GMC, Indianapolis 6, Indiana
Telephone Chapel 4 1511
AFPR Lt Col Zack Gray, Ext 4249
Beech Aircraft Corp 9709 E Central Ave., Wichita 1, Kans
Telephone Murray 3 7311 (Direct Line or Murray 3-4481)
AFPR Captain Jack W Setliff (Actg) Ext. 313
Boeing Aircraft Co., Wichita, Kans
Telephone Murray 3-8511
AFPR Colonel Warren E Newby Ext 6089
Deputy Lt Col Charles C Bliss Ext 6089
Convair Division, General Dynamics Corp., P O Box 371, Fort Worth, Texas
Telephone Pershing 8 7311
AFPR Colonel Leonard R Hall Ext 2696
Douglas Aircraft Co., Inc. AF Plant No 3 P O Box CC Admiral Station Tulsa 9 Okla.
Telephone Temple 6 1616
AFPR Lt Col Richard E Newby Ext 682
General Electric Co. P O Box 91 Cincinnati 15, Ohio
Telephone Poplar 1 0048 or 1 4100
AFPR Major Harry R D Brien, Ext 1392

Eastern Contract Management Region

Grumman Aircraft Engineering Corp Bethpage L I N Y
Telephone Glenwood 4 3200
AFPR Colonel Norman J Beaudreau
Lear Aircraft Corp P O Box 2287 Birmingham Ala.
Telephone Main 2 9411
AFPR Capt Virgil Angel Albert Parsons, Ext. 295
Lockheed Aircraft Corp Marietta Ga
Telephone Marietta 42 4 9411
AFPR Lt Col James A Harmon Ext 3271
The Martin Co Baltimore Maryland
Telephone Mulberry 7 3000
AFPR Lt Col George K O'Neil Ext. 555
Republic Aviation Corp Farmingdale L.I., N. Y
Telephone Chelsea 9 1100
AFPR Lt Col Kenneth E Berry
Sperry Gyroscope Co Great Neck L.I. N. Y
Telephone Hillside 7 3300
AFPR Major Charles L Rudisill
Curtiss Wright Corp Woodridge N J
Telephone Whitehall 4 1234
AFPR Lt Col Charles V Zeller Jr

Western Contract Management Region

Aerojet General Corp P O Box 2018 Sacramento 10, Calif
Telephone Ivanhoe 5 5111
AFPR Colonel William K Ashby Ext 4537
Boeing Aircraft Co Seattle 24 Washington
Telephone Main 2 9211 or 5 5821
AFPR Colonel William A Clark
Consolidated Vultee Aircraft Corp. General Dynamics Corp P O Box 1128 San Diego 12 Calif
Kearny Villa Rd., Sorrento Valley Rd., San Diego 2 Calif
Telephone Browning 7 8900
AFPR Colonel Harvey E Meese Ext 1685
Convair Div (San Diego) General Dynamics Corp., P O Box 1950 Station 3 3165 Pacific Highway San Diego 12 Calif
Telephone Cleveland 6 6611
AFPR Lt Col Charles W Altenhofl Ext 2927
Douglas Aircraft Co Inc 3855 Ocean Park Blvd Santa Monica Calif
Telephone Exbrook 9 7311
AFPR Colonel Olaf A Pearson Ext 3558
Hughes Aircraft Co Florence Ave & Teale St., Culver City Calif
Telephone Upton 9 7111
AFPR Colonel James T McKee Ext 3326
Deputy Lt Col Albert C Buell (Acting)
Lockheed Aircraft Corp. P O Box 551 Burbank Calif
Telephone Triangle 7 2711
AFPR Lt Col Clark V Kirkland Ext 1213
Deputy Major H W Aldridge Ext 2758
Lockheed Aircraft Corp Missiles & Space Div P O Box 504 Sunnyvale Calif
Telephone Twinoaks 5-2211
AFPR Colonel Paul W Gustafson Ext 2 5571
Deputy Lt Col Louis C Renaud
The Martin Co Denver Div P O Box 179 Denver 1, Colo
Telephone Plaintield 4-2211
AFPR Colonel Walter J Cavaar Ext 2223
Deputy Lt Col Frank Pelan Ext 2224
North American Aviation Inc Los Angeles International Airport Los Angeles 45 Calif
Telephone Orchard 7 0151
AFPR Colonel Simon E Ellis Ext 1747
Deputy Lt Col Wade H Culp
Republic Div North American Aviation Inc 6633 Canoga Ave Canoga Park Calif
Telephone Diamond 7 5651
AFPR Colonel John H Strand Ext 2215
Deputy Lt Col Frederick C Phillips, Ext 2216
Ryan Div San Diego Co Hawthorne Calif
Telephone Oregon 8 7121
AFPR Colonel Harold T Marra Ext 1981
Deputy Major Walter P Siebens Jr

AMC TEST SITE OFFICES

Eastern Contract Management Region

AMC Test Site Office (REEE) Eglin AFB Fla
Telephone Eglin AFB
Chief Major Burton A Davis Ext 2-8185
AMC Test Site Office P O Box 4587 Patrick AFB, Fla.
Telephone Ulysses 7 2961
Chief Col R M Creasbc

Western Contract Management Region

AMC Test Site Office P O Box 263 Edwards, Calif
Telephone Clifford 8 2111
Chief Maj R. S. Bartlow Ext. 4 5031
AMC Test Site Office P O Box 1847 Hallamaa AFB, N M
Telephone Granite 3 6511
Chief Lt Col R D Von Auken, Ext 3 5315
AMC Test Site Office P O Box 1525 Vandenberg AFB, Calif
Telephone Walnut 5-8651 (Santa Maria)
Chief Lt Col George W Pfaman Ext 8 5189

AIR MATERIEL FORCES

European Area

AMFEA, APO 8 N Y New York N Y Teletype address AMFEA Chateauroux A Site France
Commander Maj Gen Crenshaw Price
Deputy Colonel Joseph O Fitzgerald
Director Material Management Col R A Gardnea
Chief Maintenance Base Hannah Maj J W Tem

Pacific Area

AMFPA APO 323 San Francisco Calif Teletype address AMFPA Tokyo Unknown APO Japan
Commander Maj Gen Vincent G Hesson
Deputy Col Robert M Beharsen, Jr
Dir of Proc & Prn Col Philip J Kuhl

AIR MATERIEL AREAS

Middletown AIA Olmsted AFB Pa
Tarrytown Warehouse
Coatesville Ma Gen Donald C Hardy
Deputy Colonel Wallace J Jr
Dir of Proc & Prn Col R A Johnson Ext 4202
Mobile AMA Brookley AFB Ala
Telephone Hamilton 7111
Commander Maj Gen Oscar F Colvanea
Deputy Colonel Lawrence B Lynch
Dir of Proc & Prn Col D A Olson Ext 5281
Ogden AMA Hill AFB Utah
Telephone Taylor 5 5215
Commande Maj Gen Kenneth B Hobson, Ext 5286
Deputi Colone Victor L Anderson, Ext. 3208
Dep Proc Prdn Col R J Iverson, Ext. 3718
Oklahoma City AMA Tinker AFB, Oklahoma
Telephone Parking 2 7321
Commander Maj Gen Lewis L Mundell
Deputy Colonel Clifford C Nanasea
Dir of Proc & Prn Col S P Dillea Ext 3980
Rome AMA Griffiss AFB N Y
Telephone Rome 330 3271
Commandea Maj Gea Charles B Rout, Ext. 7751
Deputi Colonel Emmett M Tally Ja Ext 2115
Dir of Proc & Prn Col P V Kirkland, Ext 3120
Sacramento AMA McClellan AFB Calif
Telephone Whitesh 2 1511
Commandar Maj Gea Peter C Landry
Deputi Brig Gea Milton F Summerlell
Director of Proc & Prn Col J P Coolidge Ext 2 3110
San Antonio AMA Kelly AFB Texas
Telephone Walnut 3 5411
Commandea Maj Gen Wm T Fairchild
Deputi Brig Gen Doyle E Newton Jr
Dir of Proc & Prn Col Roger H Terman, Ext 6 5210
San Bernardino AMA, Norton AFB Calif
Telephone Terner 9 9911
Commander Maj Gea Ben I Funk
Dir of Proc & Prn Col Lucas P Scalley Ext 221 05
Warner Robins AMA, Robins AFB Ga
Telephone Walker 6 2626 or 6-3270
Commandea Maj Gen A V P Anderson, Ja
Deputi Colonel Custer P Cosser
Dir of Proc. & Prn Col T B Lawton, Jr, Walker 6 2981

AIR FORCE DEPOT

Dayton AF Depot Gentile AF Stn Dayton Ohio
Telephone Cleveland 2 6551
Commander Brig Gen Charles E Jung Ext 2-4130
Deputy Colonel William W Vral Ext 2-7148
Dir of Proc & Prn Col R L Salsarola Ext 2 5187

AMC CENTERS

AMC Aeronautical Systems Center Wright Patterson AFB Ohio
Telephone Clearwater 3 7111
Commandea Maj Gen. Raymond A. Davis, Ext. 2 7214
Deputy Colonel Mhair D Wilson Ext. 3 2308
AMC Ballistic Missiles Center AF Unit Post Office Los Angeles 45 Calif
Telephone Orchard 8 1480
Commander Maj Gea Thomas P Gerrity, Ext. 1451
Deputy Brig Gen Don Douglass Ext 1133
AMC Electronic Systems Center L G Hanscom Field Bedford Mass.
Telephone Crestview 4 6100
Commander Maj Gea Clyde H Mitchell Ext 2852
Deputy Colonel Charles C Segrist Ext. 2833

BASE PROCUREMENT (Formerly Called "Local Purchase")

The 170-odd Air Force Bases in United States (less Hawaii) place hundreds of thousands of contracts and purchase orders every year for items and services needed in the daily operations of the bases. In the aggregate, these purchases currently amount to hundreds of millions of dollars each year.

Each base has a Procurement Office, and in each office there is an individual who performs the functions of a small business specialist as an additionally assigned duty. At those bases, such as Wright-Patterson Air Force Base, at which Central Procurement also takes place, the Base Procurement Office nevertheless maintains its own individuality. All bases come under the fifteen major commands (i.e., Air Defense Command, Strategic Air Command and so forth). At each of the command headquarters, the Director of Material has designated a member of his staff to be the Executive for Small Business for the Command, as an additionally assigned duty. Under the technical direction of the Executive for Small Business of Air Material Command, which has operational responsibility for the entire Air Force Small Business Program in the United States (less Hawaii), the Executive's functions are to insure that all parts of the program, within the jurisdiction of the Command and its bases, are thoroughly understood and effectively carried out. In addition to the purchasing procedures carried out by the Base Procurement Offices (appropriate elements of the Command participate in the overall program of the Department of Defense). Such participation is to help bring about—through conferences, clinics, and exhibits—more knowledge on the part of the smaller concerns is to the opportunities for them in defense procurement and the steps these concerns must take to obtain consideration. Duties of the specialists at the bases include the following:

1. To serve as the focal point for all small business concerns interested in activities conducted by the base including construction and repair, maintenance, supply, services, and training.
2. To set aside procurements for the exclusive competion of small business concerns when the buyer considers that there are two or more small concerns from which fair and reasonable prices can be expected.
3. To insure that on procurements that are not thus set aside, small concerns receive equitable opportunities to compete in free and open competition with medium-size and large concerns.
4. To insure that all base personnel who are involved in material

functions are thoroughly indoctrinated in the Air Force Small Business Policy and the Program in force to carry out that policy.

5. To make periodic reports to the Executive for Small Business at the Command Headquarters showing the extent of their command activities in the small business program.

6. To call to the attention of the Chief of the Base Procurement office any problems affecting the relations between small business concerns and operations of the base.

USAF Installations in Continental United States

Alabama
Bunker Hill Air Force Base, Marion
Craig Air Force Base, Selma
Gunter Air Force Station, Gadsden
Gunter Air Force Base, Montgomery
Maxwell Air Force Base, Montgomery

Arizona
Davis-Monthan Air Force Base, Tucson
Luke Air Force Base, Phoenix
Williams Air Force Base, Chandler

Arkansas
Blytheville Air Force Base, Blytheville
Little Rock Air Force Base, Little Rock

California
Beale Air Force Base, Marysville
Castle Air Force Base, Merced
Chico Air Force Station, Maywood
Edwards Air Force Base, Muroc
George Air Force Base, Victorville
Hamilton Air Force Base, San Rafael
Long Beach Municipal Airport, Long Beach
March Air Force Base, Riverside
Mather Air Force Base, Sacramento
McClellan Air Force Base, Sacramento
Norton Air Force Base, San Bernardino
Oxnard Air Force Base, Camarillo
Travis Air Force Base, Fairfield
Vandenberg Air Force Base, Lompoc

Colorado
Air Force Accounting & Finance Center, Denver
Ent Air Force Base, Colorado Springs
Lowry Air Force Base, Denver
Peterson Field, Colorado Springs
USAF Academy, Colorado Springs

Delaware
Dover Air Force Base, Dover
New Castle County Airport, Wilmington

District of Columbia
Air Research & Development Command, Washington
Andrews Air Force Base, Washington
Bolling Air Force Base
Washington National Airport

Florida
Bartow Air Base, Bartow
Boca Raton Air Force Auxiliary Field, Boca Raton
Eglin Air Force Base, Valparaiso
Graham Air Base, Marianna
Homestead Air Force Base, Homestead
MacDill Air Force Base, Tampa
McCoy Air Force Base, Orlando
Miami International Airport, Miami
Orlando Air Force Base, Orlando
Patrick Air Force Base, Cocoa
Tyndall Air Force Base, Panama City

Georgia
Bainbridge Air Base, Bainbridge
Dobbins Air Force Base, Marietta
Hunter Air Force Base, Savannah
Moody Air Force Base, Valdosta
Robins Air Force Base, Warner Robins
Spence Air Base, Moultrie
Turner Air Force Base, Albany

Idaho
Mountain Home Air Force Base, Mountain Home

Illinois
Chanute Air Force Base, Rantoul
O'Hare International Airport, Chicago
Scott Air Force Base, Belleville

Indiana
Bakalar Air Force Base, Columbus
Shaker Heights Air Force Base, Peru

Iowa
Sioux City Municipal Airport, Sioux City

Kansas
Forbes Air Force Base, Topeka
McConnell Air Force Base, Wichita
Schilling Air Force Base, Salina
Topeka Air Force Station, Topeka

Louisiana
Barksdale Air Force Base, Shreveport
Chennault Air Force Base, Lake Charles
England Air Force Base, Alexandria

Maine
Dow Air Force Base, Bangor
Loring Air Force Base, Limestone
Presque Isle Air Force Base, Presque Isle

Massachusetts
Cambridge Research Center, Bedford
Laurence G. Hanscom Field, Bedford
Otis Air Force Base, Falmouth
Westover Air Force Base, Chicopee Falls

Michigan
K. I. Sawyer Air Force Base, Marquette
Kincheloe Air Force Base, Kinross
Selfridge Air Force Base, Mount Clemens
Willow Run Airport, Belleville
Wurtsmith Air Force Base, Oscoda

Minnesota
Duluth Municipal Airport, Duluth
Minneapolis-St. Paul International Airport, Minneapolis

Mississippi
Columbus Air Force Base, Columbus
Greenville Air Force Base, Greenville
Keesler Training Annex No. 3, Gulfport

Missouri
Aeronautical Chart & Information Center, St. Louis
Air Force Records Center, St. Louis
Malden Air Base, Malden
Richards-Gebaur Air Force Base, Grandview
Whiteman Air Force Base, Knobnoster

Montana
Glasgow Air Force Base, Glasgow
Malmstrom Air Force Base, Great Falls

Nebraska
Lincoln Air Force Base, Lincoln
Offutt Air Force Base, Omaha

Nevada
Indian Springs Air Force Base, Indian Springs
Nellis Air Force Base, Las Vegas

New Hampshire
Grenier Air Force Base, Manchester
Pease Air Force Base, Portsmouth

New Jersey
McGuire Air Force Base, Wrightstown

New Mexico
Cannon Air Force Base, Clovis
Holloman Air Force Base, Alamogordo
Kirtland Air Force Base, Albuquerque
Walker Air Force Base, Roswell

New York
Griffiss Air Force Base, Rome
Mitchel Air Force Base, Hempstead, Long Island
U. S. Naval Air Station, Brooklyn, N. Y.
Niagara Falls Municipal Airport, Niagara Falls
Plattsburgh Air Force Base, Plattsburgh
Stewart Air Force Base, Newburgh
Suffolk County Air Force Base, Westhampton Beach, Long Island

North Carolina
Pope Air Force Base, Fort Bragg
Seymour-Johnson Air Force Base, Goldsboro

North Dakota
Grand Forks Air Force Base, Grand Forks
Minot Air Force Base, Minot

Ohio
Clinton County Air Force Base, Wilmington
Gentile Air Force Station, Dayton
Lockbourne Air Force Base, Columbus
Wilkins Air Force Station, Shelby
Wright-Patterson Air Force Base, Dayton
Youngstown Municipal Airport, Youngstown

Oklahoma
Altus Air Force Base, Altus
Davis Field, Muskogee
Tinker Air Force Base, Oklahoma City
Vance Air Force Base, Enid

Oregon
Kingsley Field, Klamath Falls
Portland International Airport, Portland

Pennsylvania
Greater Pittsburgh Airport, Coraopolis
Olmsted Air Force Base, Middletown

South Carolina
Charleston Air Force Base, Charleston
Donaldson Air Force Base, Greenville
Myrtle Beach Air Force Base, Myrtle Beach
Shaw Air Force Base, Sumter

South Dakota
Ellsworth Air Force Base, Rapid City

Tennessee
Arnold Engineering Development Center, Tullahoma
Military Air Force Station, Memphis
McGhee Tyson Airport, Knoxville
Memphis Municipal Airport, Memphis
Sewart Air Force Base, Smyrna

Texas
Amarillo Air Force Base, Amarillo
Bergstrom Air Force Base, Austin
Biggs Air Force Base, El Paso
Brooks Air Force Base, San Antonio
Bryan Air Force Base, Bryan
Carswell Air Force Base, Fort Worth
Dyess Air Force Base, Abilene
Ellington Air Force Base, Houston
Goodfellow Air Force Base, San Angelo
Gray Air Force Base, Killeen
Harlingen Air Force Base, Harlingen
James Connally Air Force Base, Waco
Kelly Air Force Base, San Antonio
Lackland Air Force Base, San Antonio
Laredo Air Force Base, Laredo
Laughlin Air Force Base, Del Rio
Matagorda Island Air Force Range, Port O'Connor
Moore Air Base, Mission
U. S. Naval Air Station, Dallas
Perrin Air Force Base, Sherman
Randolph Air Force Base, San Antonio
Reese Air Force Base, Lubbock
Sheppard Air Force Base, Wichita Falls
Waco 12th Air Force Headquarters Office, Waco
Webb Air Force Base, Big Spring

Utah
Hill Air Force Base, Ogden
Wendover Air Force Auxiliary Field, Wendover

Vermont
Burlington Municipal Airport, Burlington
Ethan Allen Air Force Base, Winooski

Virginia
Byrd Field, Richmond
Langley Air Force Base, Hampton

Washington
Fairchild Air Force Base, Spokane
Geiger Field, Spokane
General Wright Air Force Base, Spokane
Larson Air Force Base, Moses Lake
McChord Air Force Base, Tacoma
Paine Air Force Base, Everett

Wisconsin
General Mitchell Field, Milwaukee
Truax Field, Madison

Wyoming
Francis E. Warren Air Force Base, Cheyenne

DEPARTMENT OF THE ARMY

Ordnance Corps

The mission of the Ordnance Corps is to provide for the research, development, test procurement, manufacture inspection distribution supply, maintenance, modification and disposal of arms, ammunition artillery, bombs, mines combat vehicles transport vehicles guided missile systems, ballistic missile systems, rocket systems and other assigned weapons systems, mobile repair shops, Army aircraft targets and drones and parts and accessories pertaining thereto, required for the Army, as assigned with respect to the Navy and Air Force and as prescribed for foreign aid programs

Ordnance Ammunition Command, Joliet Arsenal, Joliet, Ill
Procures principally for the production industrial engineering, and industrial mobilization of Ordnance materiel assigned as ammunition (e.g. Ammunition, artillery, Ammunition, small arms, Explosives and separate explosive ingredients Explosives processing equipment, Plants Grenades, Land Mines, Rockets and Signals.

Ordnance Missile Command Redstone Arsenal, Ala
Procures principally for the design research development, industrial engineering, industrial mobilization and production of missiles (e.g. Major ammunition as systems or end items of guided missile systems, Aerial target drones, Ground equipment for guided missile systems.

Ordnance Tank-Automotive Command, 1501 Beard Street, Detroit 9, Mich
Procures for the production, industrial engineering, industrial mobilization and repair part supply of Ordnance material classified as tank automotive (e.g. Automobiles, Combat vehicles, Motorcycles, Trucks, Tank, Motor scooters, Tractors, Trailers, Tires, Tubes, Batteries and automotive lighting fixtures.

Ordnance Weapons Command, Rock Island, Ill
Procures principally for the production, development, industrial and engineering, Industrial mobilizing, repair part stock and supply control of Ordnance material (e.g. Artillery, carriages, Artillery, mounts, Artillery recoil mechanisms, Artillery targets and target materials, Launchers, Machine Guns, Ammunition, clips, Ammunition magazines, Small arms, pistols and rifles, Gunsights, and optical, electrical (for seacoast artillery), Seacoast targets.

Aberdeen Proving Ground, Maryland
Procures principally for the research and/or professional operations in support of ballistic research, development of protective boat age engineering tests, and human engineering evaluation.

Diamond Ordnance Fuze Laboratories, Washington 25, D. C.
Principal development and engineering installations for electronic fuzes.

Frankford Arsenal, Bridge & Tacony Sts., Philadelphia 37, Pa.
Procures principally for the development, production, industrial engineering, Industrial mobilization, repair parts, components, and maintenance of, off-weapon fire control systems or major combinations and on-weapon fire control systems as major combinations and on-weapon fire control components (e.g. Cartridge brass, Fire control, mechanical, Optical instruments and accessories, Watches.

Office of Ordnance Research, Box CM, Duke Station, Durham, N. C.
Principal fundamental research and basic research in statistics. Contracts primarily with universities and nonprofit institutions.

Picatinny Arsenal, Dover, N. J.
Procures principally for the research and development, industrial and maintenance engineering, and initial provisioning of the newly developed items of the type listed under the Ordnance Ammunition Command including nucleus war bases.

Raritan Arsenal, Metuchen, N. J.
Procures principally for the industrial engineering, industrial mobilization, maintenance and inventory control of materiel in class (e.g. cleaning, preserving and lubricating, compounds (e.g. Cleaners, Lubricants, Preservatives, Kerosene, oils and fluids, Special oils and fluids, Packing and gasket materials, Miscellaneous hardware, Abrasive materials, Non-metallic fabricated materials, Anti-freeze.

Rossford Ordnance Depot, Toledo 1, Ohio
Procures principally for the materials, (e.g. Automotive type tools, Tool sets and tool equipment including Ordnance tools, and shop equipment, Vehicular equipment components, (e.g. Tires and tubes, Maintenance and repair shop equipment, Hand tools, measuring tools, and miscellaneous tool materials.

Watervliet Arsenal, Watervliet, N. Y.
Procures principally for the development, production, industrial engineering and industrial mobilization of Ordnance material classified as cannon, (e.g. Artillery, Cannon, Mortars, Recoilless Rifles.

White Sands Missile Range, N. Mex.
This installation has responsibility for operations and support of engineering tests and long range research on rockets and guided missiles.

Ordnance Districts

It is not necessary to refer solely to the issuing office for additional data on a bid invitation issued by any of the Ordnance Corps offices. The following Ordnance District offices are the proper points of contact for firms (within their respective geographical areas) seeking contracts. These offices have available for distribution copies of all invitations for bids issued by the purchasing offices and maintain current bidders' lists of firms within their districts. These Offices also distribute requests for proposals, and negotiate certain contracts at the request of the issuing purchasing office.

Birmingham Ordnance District, 2128 Seventh Avenue North, Birmingham, Ala.

Boston Ordnance District, Boston Army Base, Boston 10, Mass.
Springfield Regional Branch Office, Springfield Armory, Springfield 1, Mass.

Chicago Ordnance District, 623 South Wabash Avenue, Chicago 10.

Cincinnati Ordnance District, Swift Building, 238 East Ninth Street, Cincinnati 2, Ohio.

Cleveland Ordnance District, Lincoln Building, 1367 East Sixth Street, Cleveland 14, Ohio.

Detroit Ordnance District, 1580 East Grand Boulevard, Detroit, Mich.

Los Angeles Ordnance District, 55 South Grand Avenue, Pasadena 2, Calif.

New York Ordnance District, 770 Broadway, New York 3, New York.
Rochester Regional Branch Office, Sibley Tower Building, 25 North Street, Rochester 4, N. Y.

Philadelphia Ordnance District, 128 North Broad Street, Philadelphia 2, Pa.
Pittsburgh Regional Branch Office, 2nd Fourth Avenue, Pittsburgh 22, Pa.

St. Louis Ordnance District, 4300 Goodfellow Boulevard, St. Louis 20, Mo.

San Francisco Ordnance District, 1515 Clay Street, P. O. Box 1829, Oakland 12, Calif.

Signal Corps

The Signal Corps has the responsibility to plan, direct and supervise signal communications electronic pictorial and crypto logistic activities of the Army, to develop communications, electronic, pictorial and, within the established national policy, communication security systems services and material, to provide and service signal material for communications and communication security devices, electronic devices (including those for Army Aviation), meteorological devices (except those for which responsibility is assigned to other agencies) and related activities (except for that weather forecasting performed for the Army by the Air Force) required by the Army and, as assigned, for the Navy, Air Force, and other Governmental agencies and for foreign aid programs; and to administer and operate the U. S. Army Alaska Communication System.

U. S. Army Signal Supply Agency, USASSA, 225 Sc Eighteenth St., Philadelphia 3, Pa.
Principal purchasing office of the U.S. Army Signal Corps for production type items. Maintains the Signal Corps bidders list.

Laboratory Procurement Support Office, USASSA, Wal-son Area, Fort Monmouth, N.J.
Maintains bidders' list of firms and organizations who have made application to participate in Signal Corps research and development projects. Procures Research and Development services, studies and pilot production requ and for telephony, telegraphy, radio, radar, microwave, long radiation, radioactivity, metallurgy, crystalline, quartz, piezoelectricity, television, ceramics, and allied subjects and related component parts. Procures research supplies, instruments, and supplies for support activi as

Mid-Western Regional Office, USASSA, 615 West Van Buren Street, Chicago 7, Ill.
Contact point for interested as an Signal Corps new product development and pro. Displays copies of invitations for Bids and Requests for Proposals. Procures commercial and military type items assigned by USASSA Philadelphia Pa. and administers contracts translated for that purpose.

Army Electronic Proving Ground Procurement Office, USASSA, Fort Huachuca, Ariz.
Procures commercial and military type items of communications equipment for immediate support of activities at the Installation and specialized Research and Developmental support services and materials.

Pacific Coast Agency, USASSA, 125 South Grand Avenue, Pasadena 2, Calif.
Contact point for information on Signal Corps new procurement actions. Displays copies of invitations for Bids and Requests for Proposals. No procurement is made at the office.

US Army Alaska Communications System, 650 Federal Office Bldg., Seattle 4, Wash.
Procures all commercial and some military type items for the Alaska Communications System. Contact point for information on Signal Corps new procurement actions.

Transportation Corps

The Transportation Corps develops, provides and services transportation material required by the Army and as assigned, for the Navy and Air Force, and for foreign aid programs; provides or assures provision of transportation and transportation services required for the movement of persons and things for the Army, and, as assigned, for the Navy and Air Force and other governmental agencies; provides transportation engineering services as required exercises technical supervision over Army transportation movements world wide; and administers the Department of Defense activities pertaining to highways for National Defense.

Office Chief of Transportation, Washington 25, D. C.
Contact point for all Transportation Corps procurement and procurement information.

U. S. Army Transportation Research Command, Fort Eustis, Va.
Procures research and engineering services, supplies and material required for the design and construction of prototype Transportation Corps equipment. Also contracts for scientific studies related to military transportation problems. Principal contact point for all Transportation Corps research and development.

U. S. Army Transportation Material Command, The Mort Bldg., 12th and Spruce Sts., St. Louis 2, Mo.
Principal contact point for all Transportation Corps procurement of supplies. Procures railroad cars, locomotives and related equipment, household shipping containers (CONEX boxes), aircraft, aircraft engines and related items (except those procured under Air Force and Navy contracts). Procures secondary items of supply such as wire rope, alloy chain, rubber hose, hooks and shackles, plumbing, manila rope, steel plate, steel angles and bars, aluminum sheets, pneumatic tires. Procures, and is principal contact point for, the repair of all TC floating equipment. Procures services required for maintenance of TC motor pool items at supply

U.S. Army Missiles and/or Rockets

The responsibility for the expeditious execution of the U.S. Army Missile Program, so as to realize the earliest possible operational development of the missiles, has been assigned to the U S Army Missile Command, Redstone Arsenal, Alabama, under the jurisdiction of the Chief, U.S. Army Ordnance Corps

Research and development contracts for an entire missile system are usually awarded to one prime contractor" This prime contractor has the responsibility for initial production of all system components including the missile, launching and handling equipment guidance documentation, and test equipment Depending on the particular capabilities of each prime contractor various components are procured on subcontract from other manufacturers In many cases the dollar volume of subcontracted components exceeds the value of the components manufactured directly by the prime contractor

Contractor selection for production of missile components is achieved through formal advertising and negotiation Criteria considered in the selection of industrial contractors include production capability reliability costs quality of the company's commercial or military products and specific production requirements for the particular item under consideration

U S Army Ordnance Missile Command maintains a source file on industrial firms These files contain information on commercial and defense products, engineering capability plant space and equipment, financial statements and other information that is helpful in determining the full capability of a company It is important that each company keep the U S Army Ordnance Missile Command supplied with up-to-date information Submission of this material should be addressed to—

Commanding General
U S Army Ordnance Missile Command
Redstone Arsenal, Alabama

DEPARTMENT OF THE NAVY

Chief Bureau of Naval Weapons Department of the Navy Washington 25 D C
Airframes aircraft engines (jet and reciprocating) propellers, electronic equipment, aircraft armament target drones ground handling equipment for aircraft, guided missiles, ammunition fire-control equipment (including radar) naval gun mounts, missile launchers, torpedoes, mines, depth charges nets and booms aviation ordnance

Chief, Bureau of Ships, Department of the Navy Washington 25 D C
Ships and other watercraft including hull and machinery (propulsion and control equipment) electronic equipment including radar, radio and other communications equipment and accessories refrigeration equipment and laundry equipment for shipboard use

Chief, Bureau of Yards and Docks, Department of the Navy Washington 25 D C
Floating dry docks and floating cranes, major bellas plants and electrical generators; public utilities services and permanent facilities (including acquisition and disposal of real estate) This Bureau is responsible for the Navy's construction projects as well as station maintenance and repair Contracts for such projects, however are let through the District Public Works Offices

The Quartermaster General Headquarters U S Marine Corps, Department of the Navy Washington 25 D C
Automotive spare parts, engineering equipment and supplies electronic equipment and spare parts, refrigeration and air-conditioning equipment, base bulk supplies galley equipment and laundry equipment

Officer in Charge Navy Purchasing Office, Temporary Bldg D 4th St and Independence Ave S W Washington 25 D C
Common hand tools, machine tools materials handling equipment, insulation wood pallets air conditioning and refrigeration equipment ferrous metal basic shapes and forms also general procurement for naval activities in the area

Officer in Charge Navy Purchasing Office 34 Ave and 29th St Bayonne New York N Y
Miscellaneous waxes precious instruments laboratory optical electrical measuring) occlusal instruments silverware (officers mess gear) A rays card age tool and vegetable fibers; also general procurement for naval activities in the area

Commanding Officer General Stores Supply Office 700 Robins Avenue Philadelphia 11 Pa
Hardware plumbing fixtures, building materials heating ventilation and refrigeration equipment, soaps, chemicals, electric light equipment general household equipment, including electrical appliances insulating materials packing materials shipboard furniture precision instruments bearings valves, pumps, air compressors navigational and mooring aids gases fire-fighting equipment paints and equipment foundry equipment; ferrous and nonferrous metal basic shapes and forms paints and sealers

Commanding Officer Aviation Supply Office 700 Robins Avenue, Philadelphia 11 Pa.
Aircraft spare parts aeronautical instruments, aeronautical electronic equipment paints and related products, electric machine hardware

Commanding Officer Electronic Supply Office Great Lakes Ill
Electronic maintenance and repair parts in support of existing Navy electronic equipment

Commanding Officer Ships Parts Control Center Naval Supply Depot, Mechanicsburg Pa
Spare parts for shipboard equipment—gasoline engines Diesel engines, hull equipment machinery components scientific gyrocompasses and deck recoupage equipment, navigation equipment

Commanding Officer Yards and Docks Supply Office Naval Construction Center Port Hueneme Calif Hueneme, Calif
Construction and excavating equipment and spare parts automotive and construction type trucks and retreading material automotive repair equipment garage compressors and oiling materials petroleum agted bulkheads Navy sending pontoons and pontoon units electrical generators equipment re frigeration equipment stations and utility repair parts

Commanding Officer Submarine Supply Officer Bluenose Square Building 1Pth and Walnut Streets, Philadelphia 3, Pa
Spare parts peculiar to submarines including components and accessories for air conditioning and refrigeration equipment, hoists winches windlasses and capstans, electrical distributing and control equipment, electric motors parts and accessories for rotating electrical equipment, electrical quantity-measuring instruments metal valves and pipe fittings

Commanding Officer, Fuel Supply Officer Naval Gas Factory Washington 25 D C
Coal and other solid fuels

Commanding Officer Naval Ordnance Supply Office Mechanicsburg Pa
Repair parts for ordnance equipment

The following have procurement responsibilities of a special nature as indicated:

Chief Bureau of Supplies and Accounts, Department of the Navy Washington 25 D C
Exercises management control over the field purchasing activities (including all of those listed above except the technical bureaus and the Marine Corps) and technical control over such items as food clothing, and textiles common use building materials and products and services used in connection with the packaging, transportation and storage of supplies including materials handling equipment Inquiries relating to policy matters covering these items may be addressed to this Bureau

Chief Bureau of Navy Personnel Department of the Navy Washington 25 D C
Responsible for procurement of training services from educational institutions and of training publications and aids

Chief of Naval Research, Department of the Navy Washington 25 D C
Responsible for basic research including fundamental studies in such fields as electronics chemistry and physics and serves in coordinating the research programs of the technical bureaus

Commanding Officer and Director Naval Training Devices Center Port Washington Long Islands N Y
Responsible for the development and procurement of training aids and devices for Navy Personnel

Commanding Officer Navy Ships Stock Office 29th Street and Third Avenue Brooklyn 32, N Y
Purchases supplies equipment and merchandise for use at ready In Navy Exchanges throughout the world Directs and procurement of supplies, equipment and resale merchandise for Navy Ships Stores (ashore and afloat) and Commissary Stores which are contracted for on a national regional or local basis by the Navy Purchasing Office at this same address or by the area purchasing offices Local Navy Exchanges, Commissary Stores and Ships Stores do same purchasing and may be contacted for additional information The same rules and regulations which govern purchases of supplies and services are applied to Ships Store and Commissary Store purchases, whether for use or for resale These activities are operated under appropriated funds However since the Navy Exchanges are operated entirely under non appropriated funds separate legislative and regulations govern ship purchasing operation which is much compatible to private commercial practice

Commanding Officer Navy Clothing and Textile Office, U S Naval Supply Activities 29th Street and Third Avenue Brooklyn 32 N Y
Determines requirements for standard articles of the naval uniform and special clothing for climatic protection This office can localize information concerning specifications and requirements
Purchased for all military departments in accordance with single service procurement assignments

Bureau of Naval Weapons Established Representative Offices

Eastern District

Bureau of Naval Weapons General Representative 252 Seventh Avenue, New York 1 N Y
Capt W E Keese, USN
Tel Watkins 4-5000 Ext 470

Bureau of Naval Weapons Representatives The Martel Company Bellmore 3 Md
Capt H A Romberg USN
Tel Murdock 7 3000 Ext 773

Grumman Aircraft Engineering Corp, Bethpage L I N Y
Capt R N Smith, USN
Tel Wells 1 1500

Brown
LCdr J S Jolly USN, Acting
Tel South 4-1122, Ext 241

Curtis Aeronautical Lab PO Box 235 Buffalo 21 N Y
LCdr R S Tobin, USN
Tel Plaza 7580 Ext 315

Thokol Chemical Corp, Reaction Motors Div, Pond Road Denville N J
Cdr A Fleck, USN
Tel Oakwood 7 7000

Pratt & Whitney Aircraft Div United Aircraft Corp, East Hartford 8 Conn
Capt R L Deacon USN
Tel Hartford Jackson 8 4811, Ext 8441

Garden City L I 405 Stewart Avenue
Cdr S G Kalonaris
Tel Axtel 1 6600

Arma Corp Roosevelt Field Garden City N Y
LCdr George B Reeder USN
Tel Pioneer 2 2856

Vertol Aircraft Corp Morton Pa
Cdr H F McGlenn USN
Tel Kingswood 3-4000 Ext 687

Eastman Kodak Co 121 Lincoln Ave Rochester 11 N Y
CWO M A Reeves, Acting
Tel Beverly 5 7720 Ext 396

Johns Hopkins University Applied Physics Lab 8621 Georgia Ave Silver Spring, Md
Cdr G G Smith USN
Tel Jackson 9 7700

Johns Hopkins University Ordnance Aerophysics Lab Daingerfield Texas
Cdr T K Swan, USN
Tel Issa Star 2211, Ext. 476

Sandia Corp Eastern Pioneer Div Tatarboro N J
Cdr J J Coyle USN
Tel Atlas 8 2900 Ext 2153—2109

Pratt & Whitney Aircraft Florida Research & Development Center West Palm Beach Fla
Cdr J C Jennings, USN
Tel Vista 4 7311 Ext 494 495

United Aircraft Corp Ham Han Standard Div Windsor Locks Conn
Cdr G O Narmo, USN
Tel Nadenal 3-1621 Ext 361

Kaman Aircraft Corp Bloomfield Conn
LCdr J Yeatenpolus USN
Tel Hartford Chapel 2 4491, Ext 275

Central District

Bureau of Naval Weapons General Representative Wright Patterson Air Force Base Ohio
Capt R F Kane USN
Tel Clearwater 3-7111 Ext 32314

Bureau of Naval Weapons Representatives Akron 5 Ohio
Cdr C H Drainger USN
Tel Stadium 4 7137

Thompson Ramo Wooldridge Inc PO Box 3150, Cleveland 17 Ohio
Capt O H Cota Jr USN
Tel Kenmore 1 8700, Ivanhoe 1-7500, Ext 294

North American Aviation, Inc Columbus Div 4300 E Fifth Ave Columbus, Ohio
Cdr R S Chandler, USN
Tel Belmont 1 1951, Ext 203

Naval Industrial Reserve Aircraft Plant, PO Box 5907 Dallas Tex
Capt A C Holt, Jr, USN
Tel Andrews 2 3211 Ext 3000 677

Bell Helicopter Corp., PO Box 482 Fort Worth, Tex
LCdr J H Arnesalis USN
Tel Ailas 4-1491

Kansas City Mo PO Box 5301
LCdr F C Riley USN
Tel Delmas 3 7400 Ext. 292

Northern Pump Co Plymouth Minneapolis Heights Branch Post Office Minneapolis 21, Minn
Cdr J J Harrie USN
Tel Sunset 8-8601

Mallinckrodt Chemical Co 58 Belgee St
Capt L F Hassett USN
Tel Blackhorn 5-2111

McDonnell Aircraft Corp PO Box 516 St Louis, Mo
Capt R E Sorensen USN
Tel Parsh ag 1 2121 Ext 2731 2732

Western District

Bureau of Naval Weapons General Representative 430 Douglas St El Segundo Calif
Cdr C A Teahagan USN Acting
Tel Oregon 8 8956 Eastgate 3 3234, Ext. 1

Bureau of Naval Weapons Representatives, Aerojet General Corp 6352 North Irwindale Ave., Azusa Calif
Cdr H J Kitsos USN
Tel Cumberland 3 4111 Ext. 5288

Lockheed Aircraft Corp Factory A Burbank Calif
Capt D W Dearsan USN
Tel Victoria 7 2711

Lockheed Aircraft Service Inc Honolulu International Airport Honolulu Hawaii
Cdr J A Davis, USN
Tel Nuuanu 4711 Ext 43123

Lockheed Aircraft Service Inc International Airport Ontario Calif
Cdr R E Hawkins USN
Tel Yukon 4 1234 Ext 240 241

Douglas Aircraft Co Inc El Segundo Division, El Segundo Calif
Capt F N Morris USN
Tel Oregon 8-6211 Ext 2621

North American Aviation Inc Los Angeles 45 Calif
Cdr W R Wilcox USN
Tel Dachard 2-9151

Goodyear Aircraft Corp Litchfield Park, Ariz
Cdr H J Beird USN
Tel Westport 5 9231 Ext 251 219

Hiller Aircraft Corp 1350 Willow Rd Palo Alto, Calif
Cdr J A Robinson USN
Tel Davenport 5 9241, Ext 410

Naval Industrial Reserve Ordnance Plant 1625 W 8th Street PO Box 1011 Pomona Calif
Cdr A R Bruggemanns USN Acting
Tel National 9 5111

Convair Div of General Dynamics Corp San Diego 12 Calif
Cdr L L Savage
Tel Cypress 6-6611 Ext 2022

Bureau of Naval Weapons Technical Representative Tokyo Japan c/o Navy Section Military Assistance Advisory Group APO 966 San Francisco, Calif
Capt G H Elsenhart USN
Tel Tokyo 48 4226

Bureau of Naval Weapons Rep Special Project Officers, Lockheed Aircraft Corp Missile Systems Div 90 64 Sunnyvale Calif
Capt W A Heslor USN
Tel Regent P 7301

Aerojet General Corp PO Box 1947 Sacramento Calif
Cdr E D Newbaug Jr USN
Tel Yukon 5 5111

Single Manager Agencies

Military Clothing & Textile Supply Agency, 2800 S 20th St. Philadelphia 45 Pa
Military Medical Supply Agency 3rd Avenue and 29th Street Brooklyn 1 New York
Military Subsistence Supply Agency 226 W Jackson Blvd. Chicago 6 Ill
Military Petroleum Supply Agency Yards & Docks Building, Washington 25 D C

Small Business Personnel

Washington, D C

Office of Naval Material 18th & Constitution Ave NW Room 3 205
Capt F A Aills (SC) USN
Mr M Quezal
Telephone Liberty 5 4700 Ext. 66053

Bureau of Naval Weapons Room 6310 Main Navy
Cdr O Sport USN
Mr J F Lanahan
Telephone Oxford 6-6322

Bureau of Naval Personnel, Room 2605 Main Annex
Capt I N Hughes
Telephone Liberty 5 4700 Ext 42021

Bureau of Ships Room 1813 & Constitution Ave N W., Room 1225
Mr Michael Chernisk
Mr H W Darrad
Telephone Liberty 5-4700 Ext 63695

Bureau of Supplies & Accounts Room 0235 19th & Constitution Ave N W
Mr H G Fowler
Telephone Liberty 5-4700 Ext. 64600

Bureau of Yards & Docks Annex, Room 2A64
Capt W J Doyle USN
Telephone Navy Dept Columbia Heights Branch Post Office Minneapolis 21, Minn
Cdr R A Wightman
Telephone Liberty 5 4700 Ext. 56104

Military Sea Transportation Service Room 2208A Bldg T E 3000 Nevard St N W
Capt T M Davis USN
Mr C B Tyler
Telephone Liberty 5 4700 Ext 69061

Fuel Supply Office Naval Gun Factory 1st & M Sts. S E Bldg 213 4th Floor
Mr Richard M Bishop
Telephone Lincoln 7 5700 (Code 142) Ext 2231

Naval Weapons Plant, Bldg 200 11th & N Streets S E
Mr J L Kensinger
Telephone Lincoln 7 5700 (code 142) Ext 562

District Public Works Office Potomac River Naval Command, Bldg 57 3rd Floor
Mr C B Stokes
Telephone Lincoln 7 5700 (Code 142) Ext 2189

Naval Research Laboratory Bldg 32 2nd Floor Room 209 4th near Chesapeake S W
Mrs Ila B Sirila
Telephone Johnson 3 4600 (Code 172) Ext 2551

Navy Purchasing Office Room 136 Tampa Bldg D 4th & Independence Ave S W
Mr E J Elwood Jr
Telephone Liberty 5 4700 Ext 64083

Office of Naval Research Room 2P04 17th & Constitution Ave N W Tempo 3 Bldg
Mr L D Lincoln
Telephone Liberty 5 4700 Ext 66650

Hq U S Marine Corps, Room 4002 Arlington Annex
Capt F B Morris USMC
Telephone Liberty 5 6700, Ext 41938

Alaska Naval District Public Works Office Navy No 127 Postmaster Seattle Washington
Mr Rotsel R Meadsen
NS Kodiak, Ext 718

California

Marine Corps Supply Center, Barstow
Lt Col H Wallace USMC
Telephone Barstow 2173 Ext 344

Marine Corps Base Camp Pendleton
Ma W R Brumbaugh
Telephone San Christop 2 4111 Ext. 8704

Navy Purchasing Office 1206 South Santee Street Los Angeles
Mr Bertram Feldsman
Telephone Richmond 7 4711 Ext 1466

District Public Works Office San Bruno
LCdr L H Edling JU 3 1440

U S Naval Supply Center Oakland General Supply Depot Oakland Christop 2 4111
Mr C R Kinnear
TWinoaks 3 4224 Ext. 631

U S Naval Supply Center, Oakland
Mr M Zarmzal
TWinoaks 3 4224 Ext. 631

Naval Ordnance Test Station Pasadena Annex, 3202 E. Chestnut Blvd
Mr C Linton Weaver
SYcamore 3 0621

Naval Civil Engineering Corps Officer U S Naval Construction Center Port Hueneme
Mrs Olive E Sherman
Telephone Hunter 4 7651 Ext. 8515

Marine Corps Depot of Supplies 100 Harrison Street San Francisco
M E Leland
Telephone Garfield 1 2013 Ext 222

Military Sea Transportation Service Fort Mason
Ma Raymond C Carlas
Telephone Peninsul 6-2200 Ext 7105

Marine Corps Base Depot, San Diego
CWO G E Paslay USMC
Telephone CYpress 0 3941 Ext 786

District Public Works Office 1220 Pacific Highway
Ma B L Wade
BE 2 3871 Ext. 752/471

Connecticut

U S Naval Submarine Base New London
G P Sullivan
Telephone Gibson 2 4411 Ext 555

Florida

Naval Air Station Bldg 119 Jacksonville
Mr F C Barnes, Jr
Telephone Evergreen 8-7711 Ext 781

Naval Mine Defense Lab Panama City
Cdr J L Warden SC USN
Telephone Sunset 5 5285 Ext 342

Naval Air Station Bldg 613 Pensacola
G L Hempstil
Telephone Glenlak 5-3211 Ext 31P5

Georgia

Marine Corps Supply Center Albany
Maj V R Pasley USMC
Telephone HEmlock 5 3451 Ext. 221

Naval Ordnance Plant Macon
Mr G W Holcomb
Telephone Macon 3 3481 Ext 215

Hawaii

Navy Purchasing Office Bldg 475 Naval Supply Center (Mail Address) Navy 128 Fleet Post Office San Francisco Calif
Mr T H Sasa
Telephone Pearl Harbor 4713

District Public Works Office (Mail Address—Navy 128, FPO San Francisco Calif)
COR I P Cecke
DPWO Pearl Harbor, 28194

Illinois

Navy Ordnance Plant 7500 W Roosevelt Road Forest Park
Mr Jasen C VanDyke
Telephone Easterbrook 8 3800 Ext 283

Electronics Supply Office Great Lakes
Mr R L Fitzgerald
Telephone Delta 4 3500, Ext 8284

District Public Works Office Ninth Naval District
Mr Alfred Vasland
OEIla 6 3500 Ext 345

Naval Supply Depot Great Lakes
Miss S Beth Newsom
Telephone Delta 4-3500, Ext. 8305

Indiana

Naval Ammunition Depot Bldg 84 Crane
Mr P A Anderson
Telephone CRane 2-511 Ext 5731

U S Naval Avionics Facility, Indianapolis
Marshall T Wampler
Telephone Fleetwood 7 8311 Ext 498

Kentucky

U S Naval Ordnance Plant, Louisville
Mr W S Lasely

Louisiana

Naval Station Bldg 11, New Orleans
Ma G H Shepard
Telephone: Forest 6-2311 Ext 865

Military Sea Transportation Service Grit Subarea, 4000 Leapking Street
Mrs C H Wiesenberger
Telephone Whitehall 5571 Ext 240

District Public Works Office U S Naval Station
Capt C D McGraw
Telephone FOrest 6 2311 Ext 340

Maryland

Naval Ammunition Depot Oakland Pier
Mrs Grena Moore
Telephone Valnatser 3 3111 Ext 201

Naval Academy Annapolis
Ma John Peet, Jr
Telephone Colonial 3 2611 Ext. 739

Naval Powder Factory Indian Head
Ma J A Kanlen
Telephone Riverside 3 2111 Ext 173

Naval Ordnance Laboratory Silver Springs

Naval Hydrographic Office, Suitland
Mr J G Newberry
Telephone Jordan 8-9400 Ext 205

Massachusetts

Naval Shipyard Bldg 149, Boston
Ma A J Nolan
Telephone Charleston 2-1400 Ext 281

District Public Works Office 495 Summer Street, Boston
Mr N F Flynn
LI 2 5100 Ext. 284

New Hampshire

Naval Shipyard, Bldg 153, Portsmouth
Mr W M Varrell
Telephone Islawood P 1000 Ext 424

New York

Military Medical Supply Agency 84 Sands St. Brooklyn
Lt W E McCarville MSC
Talashana MAin 5-4581 Ext. 411

Navy Ships Stores Office, 3rd Ave & 29th St., Brooklyn
Ma J O Combs
Telephone STerling 8-5900 Ext 352

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U S Navy Purchasing Office Naval Supply Activities, 3rd Ave & 24th St Brooklyn
Mr Joseph Riemer
Telephone STerling 8-5800 Ext 884
Military Sea Transportation Service Atlantic Area, 58th Street & 1st Ave., Brooklyn
Mr G P Cross
Telephone Gedney 9-5800 Ext 5161
U S Naval Training Devices Center Sands Point, L I
Mr Herbert A Treat
Mr E J Bocallahalia
Telephone Port Washington 7-8300 P33
N Y Naval Shipyard
Mr L H Strakowsky
District Public Works Office 90 Church St.
Lt R E Lanne
Telephone P 2-3600 Ext 8389

North Carolina

U S. Marine Corps Air Station Cherry Point
Mr E J Beamon
Telephone Gilbert 7-2111 Ext. 23189
U S Marine Corps Base Camp LeJeune
Mr E D Cleaton
Telephone Camp LeJeune Ext 75566

Oklahoma

Naval Ammunition Depot, McAlester
Mr B H Adams
Telephone: GA 3 6350, #11

Pennsylvania

U S Naval Air Development Center, Johnsville
Mr G F Angelsinger
Telephone OSborne 9-7000 Ext. 265
Ships Parts Control Center Mechanicsburg
Mr Lee A Yeager
Telephone POplar 6-8751 Ext 316
Ordnance Supply Office, Mechanicsburg
Mr P J Horan
Telephone Poplar 6-8751 Ext. 719
Aviation Supply Office 5801 Tabor Avenue, Philadelphia
Mr W F O'Connell
Telephone Pilgrim 2-1000 Ext 548
District Public Works Office Bldg 1 U S Naval Base
Mr R I Downey
Telephone HO 3-1000 Ext 3657
Naval Air Material Center Bldg 70 U S Naval Base Philadelphia
Miss Mildred Miller
Telephone Neward 3-1000 Ext 3432
General Stores Supply Office 700 Robbins Avenue, Philadelphia
Mr S Charles
Telephone Pilgrim 2-1000 Ext 789
Submarine Supply Office Bellenhouse Square Bldg., 19th & Walnut Streets Philadelphia
Mr John T Howard
Telephone Locust 7 5778, Ext 229
Marine Corps Supply Activity 1100 South Broad Street, Philadelphia
Mr V P Manganaro
Telephone. Kingsley 6-2000, Ext. 393
Naval Ordnance Plant York
Mr E J Yerger
Telephone York 7871 Ext 285
Philadelphia Naval Shipyard Naval Base
Mr C B Friel
Telephone Howard 5 1600 Ext 2810

Rhode Island

Naval Supply Depot Bldg 11 Coddington Cove, Newport
William L Whitley
Telephone VI 7 2200 Ext 0330

South Carolina

Naval Shipyard Bldg 7 Charleston
Mr W H Hasenmuller
Telephone SHerwood 7-4171 Ext 2107
District Public Works Office Naval Base P O Box 365
Mr T E Page
Telephone SH 7 4171 Ext 2487
Marine Corps Recruit Depot Parris Island
Mr F E Hebert
Ext 5074

Tennessee

Naval Air Station Bldg 11 North Side Memphis
Mr John G Sais
Telephone Jackson 6-9851, Ext 211

Texas

Naval Air Station, Corpus Christi
Mr H F Hale
Telephone (terminal) 5-8211 Ext 2278
Naval Station, Orange
Lt (J G) E. G Raborn
Telephone TUxedo 3-4311, Ext. 281

Virginia

Navy Proving Ground Dahlgren
LCDR A B Jaquay, SC USN
Telephone North 3-8501 Ext 210
Navy Purchasing Office, Bldg 123 Naval Supply Center, Norfolk
Miss Esther Roberts
Telephone Madison 2-8211 Ext 3031
District Public Works Office Naval Base
Mr C A. Gnatkow
Telephone: MA 2-8211, Ext 2926
Norfolk Naval Shipyard
Mr L C. Shaughnessy
Telephone EXpert 7-4581 Ext 2046
Marine Corps Schools, Quantico
Lt Col Murray L. Thompson USMC
Telephone Quantico 1000 Ext 9776, 6165

Washington

Puget Sound Naval Shipyard Bremerton
Mr R I Shallenberger
Telephone Essex 3-5011 Ext 07-355
Naval Supply Depot Seattle
LCDR E E Greenhall (SC) USN
Telephone Alder 5200 Ext #21 #22
Major Purchasing Offices
Military Sea Transportation Service North Pacific Subarea—Pier 37
Mr W D Zevenbergen
Telephone Alder 5200, Ext 301
District Public Works Office Seattle Naval Station
Mr G L Moulton
Telephone Alder 5200 Ext 337

Research and Development Oppartunities

The majority of naval research and development contracts are awarded by the activities listed below Interested firms should notify the appropriate activity of the specific research or development areas in which they are qualified, giving complete information on available facilities, past experience in Government and commercial work, qualifications of technical personnel and financial status

Chief Bureau of Aeronautics Department of the Navy Washington 25 D C
Issues research and development contracts in the general area of airframes aircraft engines propellers, electronic equipment aircraft armament anti fire control systems, aeronautical instruments target drones ground handling equipment for aircraft guided missiles parachutes, flight clothing survival equipment, metals chemicals, plastics and photographic equipment
Chief Bureau of Ordnance Department of the Navy Washington 25 D C
Issues research and development contracts in veloing all types of naval ordnance items including guided missiles mines torpedoes guns, rockets launchers explosives, nuclear weapons countermeasures, and ammunition
Chief Bureau of Ships Department of the Navy Washington 25 D C
Issues research and development contracts involving ship design engineering services fuels and lubricants chemistry metals and metallurgy electronics textile and safety equipment wood products plastics, ceramics and dielectrics coatings and preservation noise vibration and shock electronic equipment and components and hull and machinery components
Chief of Naval Research, Department of the Navy Washington 25 D C
Issues contracts for basic research including fundamental studies in such fields as electronics, chemistry and physics and coordinates the research programs of the technical Bureaus of the Navy

DEPARTMENT OF DEFENSE AVIATION PLANTS PROCUREMENT ASSIGNMENTS

Aircraft Plants Assigned Air Force

Beech Aircraft Corp Wichita Kansas
Bell Aircraft Corp., Wheatfield N Y
Bell Aircraft Corp Tonawanda N Y
Boeing Airplane Co Renton Washington
Boeing Airplane Co Seattle Washington
Boeing Airplane Co Wichita Kansas
Cessna Aircraft Co Wichita, Kansas
Douglas Aircraft Co Inc Long Beach Calif
Douglas Aircraft Co Inc NIR Plant No 3 Tulsa, Oklahoma
Fairchild Engine and Airplane Corp Fairchild Aircraft Division, Hagerstown Maryland
General Dynamics Corp Convair Div Plant No 2 San Diego Cal
General Dynamics Corp Convair Div., Plant No 4, Fort Worth, Texas
Hayes Manufacturing Corporation Aircraft Division Birmingham Alabama
Hughes Tool Co Hughes Aircraft Div., Culver City, Calif
Lockheed Aircraft Corp Plant B Burbank Calif
Lockheed Aircraft Corp Marietta, Georgia
Lockheed Aircraft Corp Van Nuys Calif
North America Aviation Inc Inglewood Calif
North American Aviation Inc, Downey, California
Northrop Aircraft, Inc Hawthorne, Calif
Northrop Aircraft Inc Radondo Dis Van Nuys Calif
Palmdale Production and Testing Center Palmdale, Calif
Republic Aviation Corp Farmingdale, N Y
United Aircraft Corp., Sikorsky Aircraft Division, Bridgeport Conn

Engine Plants Assigned Air Force

Aerojet-General Corp., Lloyd Rocket Plant Nimbus Station Sacramento, Calif
AVCO Manufacturing Corp Bridgeport Lycoming Division Stratford Conn
AVCO Manufacturing Corp Lycoming Spencer Division Williamsport Penna
Continental Motors Corp Continental Aviation and Engineering Corp 1678 Algonquin Avenue Detroit, Michigan
Curtiss Wright Corporation, Wright Aeronautical Division Woodridge N J
Fairchild Engine and Airplane Corp Fairchild Engine Division Deer Park N Y
Ford Motor Company Ford Aircraft Engine Plant Chicago Illinois
General Electric Company Aircraft Gas Turbine Division Plancor 36 Evendale Ohio
General Electric Company Aircraft Gas Turbine Division Plancor 548 West Lynn, Mass
General Motors Corp Allison Division Indianapolis Ind

Propeller Plants Assigned Air Force

Curtis Wright Corporation Propeller Division, Caldwell N J
General Motors Corporation Aero Products Division, Vandalia Ohio

Aircraft Plants Assigned Navy

Bell Aircraft Corp Bell Helicopter Corp Hurst, Texas
Chance Vought Aircraft Inc, Plant B Dallas Texas
Douglas Aircraft Co Inc. El Segunda, Calif Santa Monica, Calif
Edo Corporation College Point N Y
General Dynamics Corp Convair Div Plant No 1 San Diego Calif
Goodyear Tire & Rubber Co., Goodyear Aircraft Corp Akron, Ohio
Grumman Aircraft Engineering Corp Bathpage New York
Hiller Helicopter Inc Palo Alto, Calif
Kaman Aircraft Corp Bloomfield Conn. Windsor Locks, Conn
Lockheed Aircraft Corp Plant A Burbank Calif
Martin Co Middle River Maryland
McDonnell Aircraft Corp St Louis Mo
North American Aviation Inc Columbus Ohio
Ryan Aeronautical Corp San Diego Calif
Temco Aircraft Corp Plant A Dallas, Texas
Vertol Aircraft Co Morton Pa

Engine Plants Assigned Navy

Aerojet-General Corp Azusa, Calif Sacramento Calif
Reaction Motors Inc Denville New Jersey
United Aircraft Corp Pratt & Whitney Aircraft Div., East Hartford Conn. North Haven Conn South-ington Conn
Westinghouse Electric Corp Aviation Gas Turbine Division, Essington Pa Kansas City, Mo.

Propeller Plants Assigned Navy

United Aircraft Corp Hamilton Standard Propeller Division Windsor Locks Conn

Selling to NASA

About 75 percent of all NASA expenditures go to private business, industry and educational and research organizations NASA intends to continue to support and utilize these resources to the maximum extent

Although some major contracts and arrangement for routine Head quarters supplies and services are contracted by Headquarters in Washington, the majority of contracts are planned and negotiated in the field Each Research Center contracts for its own support including procurement of equipment, construction and R & D

Each Center has its own procurement contract negotiation and small business staff These offices maintain their own bidders or source lists for the supplies services or research which they require Any NASA procurement office can provide you with forms you can use to have your organization placed on these lists Obtain copies provide all the information called for, and forward one to each of the contracting Centers with which you wish to do business This is an important step if you wish to be considered when proposals or bids are requested NASA's decentralized procurement provides 'on the scene" control and helps to insure a diversity of sources This means economy for the taxpayer and a wider span of business opportunities for you as a prospective contractor

NASA contracting procedures generally follow the standard Armed Services Procurement Regulations used by the military services or Federal Procurement Regulations used by other Government agencies However there may be some differences in particular circumstances where the Armed Service or Federal Regulations would not be practicable or consistent with NASA's mission as established by the Congress Such departures from standard procedures will be clearly explained in advance

All NASA procurement offices buy supplies or services in one of these two ways

FORMAL ADVERTISING BIDS or *NEGOTIATED PROCUREMENT*

Here are the essential features of each

ADVERTISING FOR BIDS

Requests for bids are made whenever the supplies, materials, equipment, construction work or services required can be clearly described in the scope of work, specifications or drawings

Generally, for such contracts, the purchasing office will send out 'Invitations for Bids" to organizations on its "bidders list" for the particular item That is why it is important for you to obtain fill out and submit the special forms for this purpose The purchasing office then knows something of your capabilities and knows that you are interested in bidding on a particular item or service

On occasion a bidders list will contain so many names for an item or service it would not be practicable to solicit and examine bids from every potential source In these cases the office may send invitations to only part of the list each time it makes a purchase The names are changed at subsequent purchase invitations, until every listed firm is given an opportunity to bid This usually applies to common commercial items where there are numerous sources

Each Invitation to Bid will include technical specifications delivery or completion dates, place and method of delivery the nature and number of reports or manuals which may be required operational tests and instructions and other items which should be considered in submitting a bid In addition the contract clauses, terms and conditions are set forth in detail There will also be a notice of the date hour and place when the bids will be publicly opened and recorded

As you follow the instructions on the Invitation to Bid consider carefully any special conditions or clauses Remember that mistakes discovered after the opening of a bid may not be subject to correction and can be costly

Bids that arrive after the designated hour are "late bids" and will not be considered unless they have been delayed in the mails for reasons over which you have no control Unless specifically authorized by the invitation to bid or accompanying papers a telegraphic or alternative bid will not be considered

NEGOTIATED PROCUREMENT

The technique of negotiated procurement is also employed by NASA under circumstances authorized by law Negotiated procurement has particular application in research and development where it is rarely possible to draft detailed specifications

When NASA employs negotiated procurement it makes use of bidders or source lists However, the procurement office may not find it feasible to request proposals or quotations from every organization on the list In such cases requests may be sent only to firms believed to be most qualified Requests for proposals are sent to enough suppliers to assure full and free competition In this way unqualified firms are not encouraged to incur substantial costs in preparing proposals where there is little prospect of award to them Uninvited proposals however are considered

The appropriate NASA contracting officer will review the various quotations or proposals received He is authorized to negotiate further with firms which have submitted the most acceptable plans Award of a contract is generally made by administrative decision based on a thorough analysis of all the facts presented The contracting officer considers the factors previously mentioned and in addition such matters as price, delivery and quality of product

If your proposal is acceptable to NASA a number of details will be discussed and worked out before a contract is signed You may at any stage in the negotiation, be asked to submit a detailed cost summary or breakdown together with supporting data or other information

It should be understood that even when the Government requests a proposal there is no obligation to reimburse a bidder for any costs incurred in submitting the proposal

RESEARCH PROPOSALS

You don't have to wait for NASA to make a formal request for an R & D proposal If you have an idea which is original in nature and concept and which falls within NASA's field of interest you can submit your plan directly without waiting to be asked

There is no specific form required for submitting unsolicited R & D proposals But here are some of the items you should include

- Name and address of your organization
- Number of employees including totals and qualifications of technical personnel
- Brief description of your facilities particularly those which would be used in your proposed R & D effort
- Brief outline of your previous

work and experience in the field.

If available, you should include a descriptive brochure and financial statement

Title of your proposed research and name of the principal investigator (s)

A brief abstract of the proposed project.

A suggestion as to the proposed starting and completion dates

An outline of your proposed budget, including information on equipment, facility and personnel requirements

Names of any other Federal Agencies receiving this proposal

Research proposals should be addressed to the National Aeronautics and Space Administration, Washington 25, D.C. marked, Attention: Office of Research Grants and Contracts. You should send 10 copies.

Your proposal is then studied by a special staff. Proposals which would further NASA program and not duplicate existing work to an unreasonable degree are then referred to NASA engineers and scientists in Washington and in the field who will make individual reports and recommendations to the appropriate NASA officials.

You can save time and speed a decision on your proposal by avoiding highly detailed and elaborate information in your initial submission. A complete proposal in final form need be submitted only after it has been determined that the project you propose is relevant to NASA needs and warrants more detailed study. Your informal letter proposal should come first.

NASA RESEARCH CENTERS

NASA Headquarters, National Aeronautics and Space Administration Washington 25 D. C.
Director, Procurement and Supply Ernest W. Brackett, Telephone DU 2-6376
Small Business Advisor and Industry Assistance Officer Jacob M. Koby Telephone DU 2-6814

Ames Research Center, Moffett Field, California, Moon Tair View California Tel Yorkshire 7 5511
Procurement Officer A. S. Nerting
Small Business Specialist Donald E. Davis
The Ames Research Center with an extensive background in high speed aerodynamics is currently making important contributions in basic and applied research on both aeronautical and space flight problems.
Approximately two-thirds of the Center's programs are directly applicable to space particularly atmosphere re-entry for manned satellites, blast-glide vehicles, proposed manned interplanetary and lunar craft and ballistic missiles. This includes a wide variety of environmental studies as well as research both basic and applied, in rocketation and guidance.
The remaining portion of the Ames research effects in concerned with the fundamentals of hypersonic and supersonic aircraft and the problems of vertical and short take-off and landing aircraft.
Typical projects of the Ames Research Center include Orbital attitude stabilization of an advanced meteorological satellite. Study of star and control for an orbiting astronomical observatory. Studies of the ability of a human pilot to control a space vehicle during re-entry. Design approaches for re-entry vehicles. Wind tunnel and flight research on vertical and short take-off and landing aircraft. Instrumentation and simulation techniques and devices and studies of military and civilian aircraft of the future.

Langley Research Center Langley Field Virginia Hampton Virginia, Tel. Bach 2-6341
Procurement Officer Sherwood L. Butler
Small Business Specialist, Joseph F. Healy
The Langley Research Center is primarily concerned with the conduct of research related to the problems associated with space flight and entry from space into planetary atmospheres and problems of advanced aircraft.
In the areas of space flight and atmosphere entry Langley Research Center activities include work on heat transfer materials, structures, and guidance and control of satellites and spacecraft, ballistic missiles, anti missile missiles, and boost-glide and winged space vehicles.
Aircraft research problems investigated at Langley are applicable to military and commercial vehicles of all types—missiles, bombers interceptors supersonic transports helicopters vertical takeoff/landing (VTOL) and short takeoff/landing (STOL) systems and ground effect machines (GEMS) which permit large vehicles to ride on a cushion of air.
Typical projects of the Langley Research Center include: Experimental techniques duplicating the high speed high-temperature environment of returning spacecraft. Aerodynamic and structural research related to high-speed airplanes, missiles and spacecraft. Studies of basic fluid mechanics including magnetohydrodynamics and the characteristics of gases at high temperature. Development of special structures capable of withstanding high temperature re-landing impacts. Design and development of specialized research instrumentation and supporting research or specific development projects for both NASA and other Government organizations including Mercury Minuteman Polaris and X-20.

Goddard Space Flight Center Greenbelt, Maryland To Lincoln 7 9575
Procurement Officer Daniel H. Murphey
Small Business Specialist Harry T. O'Toole
The Goddard Space Flight Center is under construction with completion scheduled for late 1961. It is named for the late Dr. Robert H. Goddard the "Father of American Rocketry." Pending completion of the permanent facility, personnel are housed in other buildings in the National Capital Area and at the Langley Research Center.
The major role of the Goddard Space Flight Center will be in the fields of scientific earth satellites, manned flights, and communications and meteorological satellite systems. This will include advanced planning and execution of technical projects including monitoring of contractors in addition to the direct flight activities. Goddard responsibility will be related tracking data acquisition and data reduction from their flights.
Typical projects of the Goddard Space Flight Center include advanced planning and assistance in formulation of the National Space Program in the space sciences, manned flight and satellite application areas. Scientific and engineering research necessary to serve as a base for future ideas and applications. Prototype fabrication of components and systems either by NASA personnel or by assigned contract and management of operational programs in certain aspects of space communications and tracking including orbital computation data reduction and interpretation.
One of the major subdivisions of the Goddard Space Flight Center is the Space Task Group which was created in the fall of 1958 to carry out Project Mercury the NASA program to investigate man's performance capabilities and ability to survive in a true space environment. This program involves research and development "bulldog" and unmanned suborbital and orbital flight and recovery.

Jet Propulsion Laboratory, California Institute of Technology 4800 Oak Grove Drive, Pasadena 3 California, Tel SYlvan 8-6811
Procurement Officer William Vaughn
Small Business Specialist D. W. Arswald
The task of exploring the moon and the planets is the major responsibility of NASA's Jet Propulsion Laboratory.
Research at JPL is administered through eight technical divisions and covers the broad spectrum of activities associated with space programs, including: aerodynamics, chemistry, guidance communications, physics mathematics and many other related fields.
Although JPL is operated under contract by the California Institute of Technology it follows NASA policy which encourages subcontracting tasks to industry. It is expected that in the near future 70 percent of the JPL contract funds will be awarded to outside organizations.

Western Operations Office 150 Pico Boulevard Santa Monica, California Tel EXbrook 3-9541
Procurement Officer Earle Sample
Small Business Specialist Paul E. Ross
Liaison responsibility for NASA contract activities located west of Denver is performed at the Western Operations Office, Santa Monica, California. This office provides liaison on the West Coast for industry and research organizations on one hand and for NASA headquarters and field installations on the other.
The Western Operations Office administers NASA contracts performs technical monitoring and liaison on NASA contracts or projects and advises Headquarters on technical developments and capabilities in the area. The office performs associated security legal and patent services and auditing.

Flight Research Center, Box 273 Edwards, California, Tel Clifford 8-2111
Procurement Officer Merrit E. Bowling
Small Business Specialist Lloyd J. Walsh
Full scale flight research including such fields as aerodynamics, hot structures operating problems and the mechanics of flight in the atmosphere is the task of the NASA Flight Research Center.
In addition to analytical programs the Flight Research Center specializes in extensive flight studies using specially equipped conventional and experimental aircraft. A major program of the current time is the X-15 designed to yield new data at extreme altitudes and speeds. A major future program involves technical direction for research instrumentation and participation in the flight program of the joint USAF-NASA Dyna Soar I.
While the major effort of the Flight Research Center is directly associated with the X15 program additional research includes: Prediction of hypersonic aerodynamic characteristics through analog simulation techniques and correlation with flight investigation of the handling qualities of advanced military and commercial aircraft and radar and telemetry support for flight projects.

Wallops Station, Wallops Island, Virginia, Tel Valley 4 3431
Procurement Officer Erwin T. Birch
Wallops Station is a primary center for the launching of research missile for the study of hypersonic and space flight problems. This includes basic studies in connection with Project Mercury.
Many small staged research missiles are fired from the Wallops Station range in this each year. Some of these missiles have flown higher than three million feet above the Atlantic Ocean and at speeds in excess of 16,000 miles per hour. NASA also plans the launching of small earth satellites into orbit from Wallops. Typical projects at the Wallops Station also include flight studies of airplane missile or space vehicle "research shapes". Flight studies of dynamic scale models of actual flight vehicles still in the design stage and research with free fall instrumented models dropped from aircraft.

Marshall Space Flight Center, Huntsville, Alabama, Tel JEfferson 6 9411
Procurement Officer Wilbur S. Davis
Small Business Specialist J. A. Harrison
The Marshall Space Flight Center consists mainly of facilities and personnel transferred under agreement from the Army Ballistic Missile Agency and other Army organizations at Redstone Arsenal, Alabama. The Center occupies 1,200 acres adjoining the city of Huntsville. Its facilities are valued at approximately $140 million. The Center has charge of developing and operating NASA's launch vehicles, and conducting related research.
Technical functions of the Center are divided among five laboratories. Activities include investigation of aeroballistics and related sciences; simulation and data reduction; production of experimental metal and ceramic hardware; and research in manufacturing methods and technology; the design and pilot development of guidance and control systems and checkout and launching of boosters and space vehicles.
Typical projects at the Marshall Space Flight Center include: Launching of spacecraft with the JUNO II booster. Modifying Redstone rockets for Project Mercury and development of the Saturn ard cluster vehicles. The F-1 rocket chamber 3.5 million pound thrust engine and the 200,000-pound liquid hydrogen liquid oxygen engines.

Lewis Research Center 21000 Brookpark Road Cleveland 35 Ohio Tel Winton 1-4629
Procurement Officer John Biggs
Small Business Specialist Norman C. Probst
The Lewis Research Center is primarily responsible for basic and applied research in aeronautical and space propulsion and power generation. The effort is divided into five major areas: airbreathing engines; chemical rocket engines, nuclear rocket engines, electrical propulsion systems and power generation systems. In addition, the Research Center conducts research in materials, lubrication and weather and instrumentation. Lewis is responsible for the operation of the Plumbrook Research Facility at Sandusky, Ohio. The facility conducts research pertinent to nuclear rocket systems, chemical rockets and power generator systems.
Typical projects at Lewis include: Effect of zero "G" condition on propellant storage and gunning systems. High-energy propellants for rocket systems. Propulsion systems for soft lunar landings. Direct conversion of heat to electricity. Electrical rocket systems for space propulsion. Materials and heat transfer research related to nuclear rocket systems and analytical and experimental studies of fluid mechanics involving pumps, turbines and heat exchangers.

SECURITY REGULATIONS

NASA, to safeguard its classified contracts, has adopted the Department of Defense Industrial Security Program. This means that if you want to participate in a classified prime or subcontract you must have, or must obtain, a Department of Defense Security clearance.

Advanced Research Projects Agency

Organization

The Advanced Research Projects Agency (ARPA) was established in February 1958 in response to an urgent need for centralized management of selected research projects which were essential to the security of the United States. As initially established, ARPA was a line agency of the Department of Defense, reporting to the Secretary of Defense. In late 1959 a realignment was effected under which the Director of ARPA is now responsible to the Director of Defense Research and Engineering.

How ARPA Operates

Within program areas assigned by the Director of Defense Research and Engineering ARPA plans, initiates and directs specific research and development projects. ARPA operates as a small management team having sole responsibility for making decisions with respect to its assigned projects. A member of the pertinent ARPA Technical Office is designated as project manager for each project and he is the official ARPA representative in dealing with contractors and contracting agents.

In accomplishing its assignments, ARPA must determine the present "state of the art" and decide on the courses of action which are consistent with Department of Defense objectives and with available resources. In so doing ARPA gives consideration to all available knowledge in the field particularly to proposals advanced by individuals industry and government agencies.

Upon approval of a proposal ARPA normally issues a work order, (ARPA Order) directly to a subordinate activity of one of the military departments e.g., Air Research and Development Command, Army Ordnance Missile Command, Office of Naval Research, or to another government agency which acts as contracting agent for ARPA. In certain instances, ARPA may arrange for contracts to be awarded directly to individuals business firms or educational or research institutions.

Funds necessary for the accomplishment of ARPA projects are made available from the ARPA budget.

How Unsolicited Proposals Should Be Prepared and Submitted

Proposals should be submitted in duplicate to the Director, Advanced Research Projects Agency, The Pentagon, Washington 25, D. C.

It is the desire of ARPA to utilize small business to the maximum extent possible. Therefore proposals from small business are particularly encouraged.

Before submitting an unsolicited proposal to ARPA, the proponent should make a thorough search of all technical reports, patents and other data pertaining to the subject in order to become thoroughly familiar with the state of the art.

No standard format exists for submission of proposals. However, they should contain the following information (proposals should not normally exceed 25 pages in length):

1. General statement requesting consideration of the proposal
2. A technical description of the proposed work, including a brief review of the scientific background and of work previously done in the field of the proposals
3. Statement of the objectives of the project
4. Technical approaches proposed
5. Special facilities and equipment required and available
6. Major phases and action milestones through which the project will progress with estimated dates for each.
7. Estimated cost of the proposal, showing a breakdown of major cost categories
8. Names and background of principal scientists and engineers who will be used in the project.

To facilitate handling and evaluation of unsolicited proposals it is recommended that a covering letter list the names of other government activities to which the proposals have been submitted.

Any information contained in a proposal which concerns a basic or major improvement and which is considered to be of a proprietary nature should be clearly identified. A differentiation should be made between proprietary data and patent data when one or both are contained in a proposal. (The Armed Services Procurement Regulations (ASPR) Section 9.201(b) gives the definition of proprietary data. These may be seen at the office of any contracting officer of the Department of Defense or they may be obtained from the Superintendent of Documents, Government Printing Office.)

The government is not obligated for reimbursement of costs incurred in preparing and submitting proposals.

Who May Be Contacted

Correspondence regarding ARPA activities should be addressed to the Director, Advanced Research Projects Agency, The Pentagon, Washington 25, D. C. Acknowledgment will be made of the receipt of all proposals, together with a statement of application to ARPA fields of interest.

Following issuance of an ARPA Order and establishment of a contract, contacts should be generally with the contracting agent (the addressee of the pertinent ARPA Order). Where this is not feasible, contact may be made with ARPA's Technical Offices which will be familiar with the status of the Order.

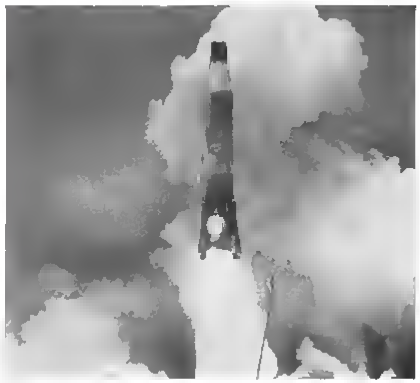
Project assignments held by ARPA are described in a brochure which may be obtained by writing the Advanced Research Projects Agency, The Pentagon, Washington 25, D. C.

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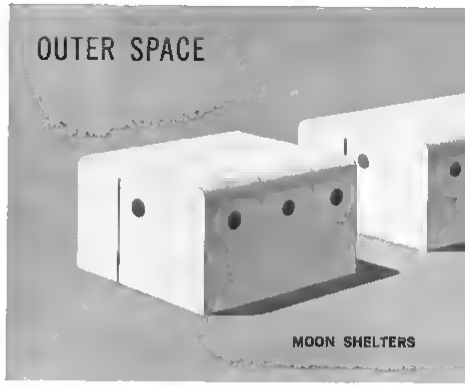
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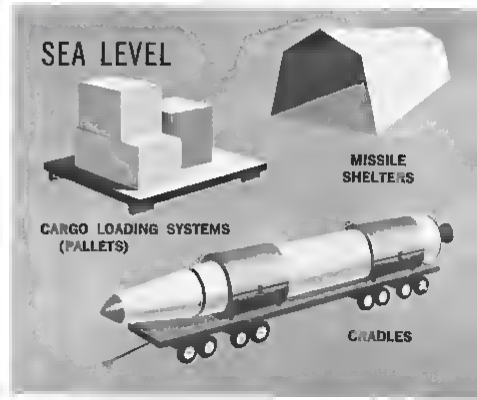
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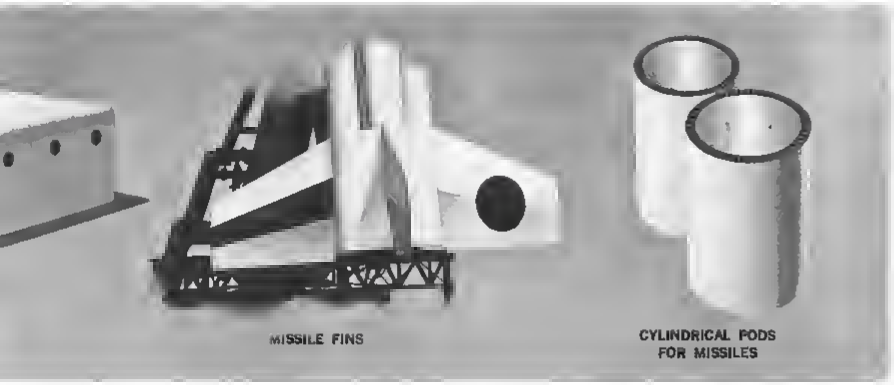
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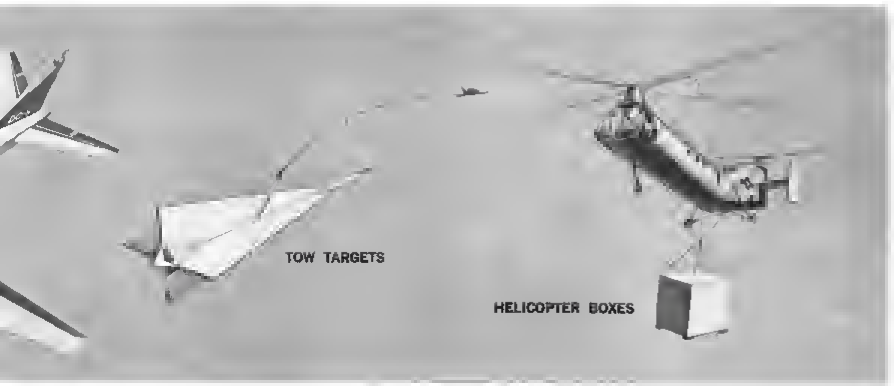
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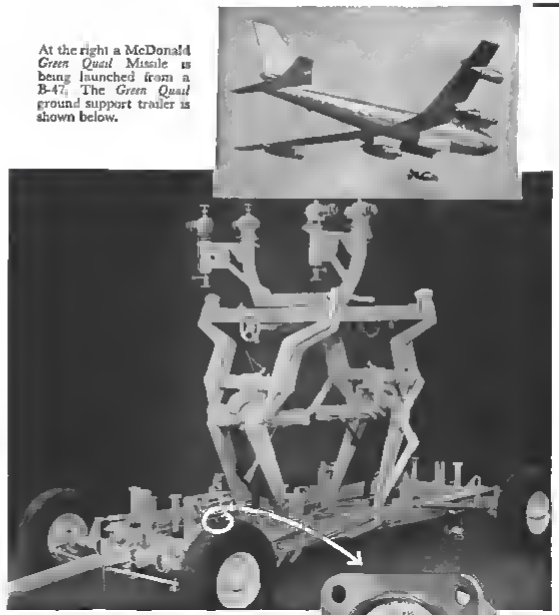


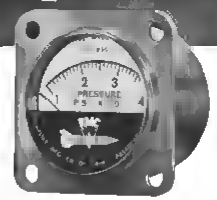






At the right a McDonald *Green Quail* Missile is being launched from a B-47. The *Green Quail* ground support trailer is shown below.





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Fast, because they are designed for maximum readability and quick response. Dependable, because of their simple direct-drive operation and precise construction.

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KANSAS, Prairie Village 15
Endicott 2 2843

Don W. Bruner
Benson Engineering Co.
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KANSAS, Wichita 2
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Tate Engineering, Inc.
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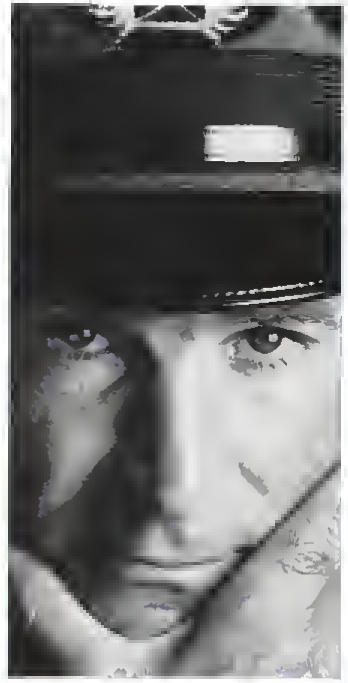
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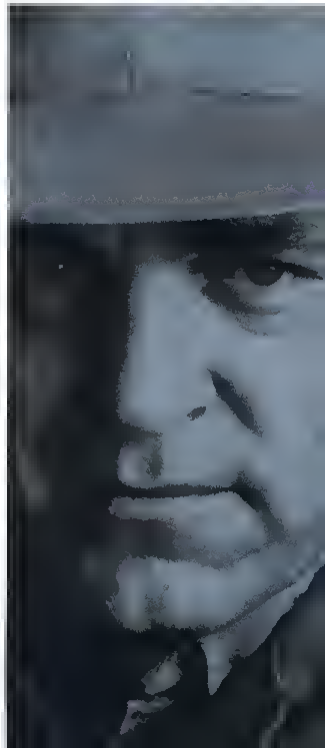
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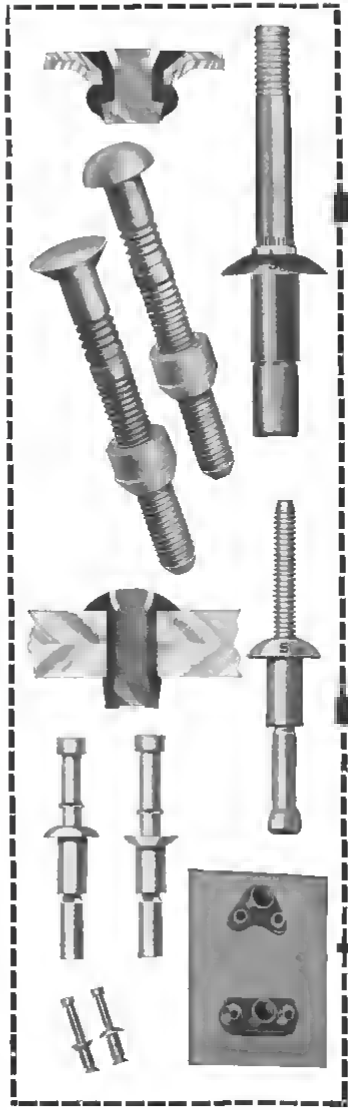
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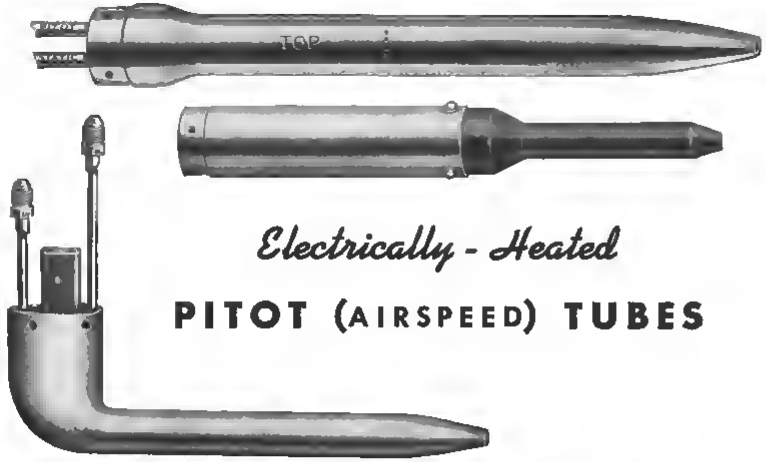
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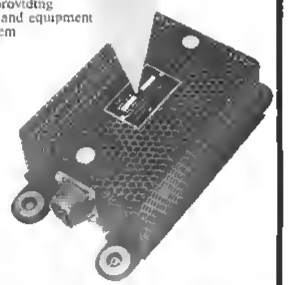
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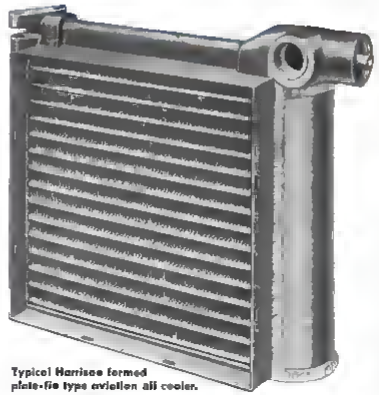
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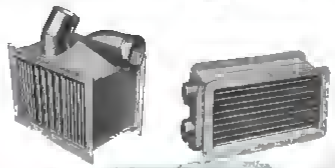
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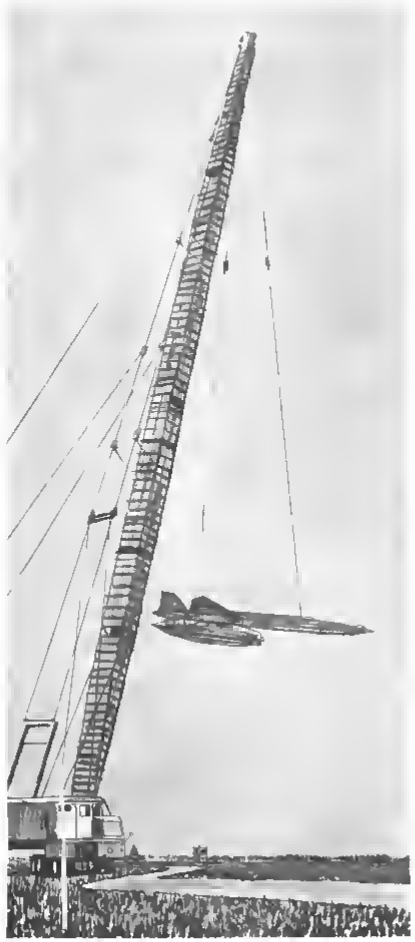
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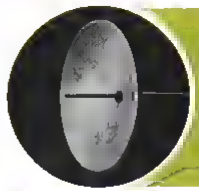
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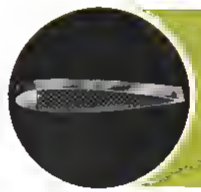
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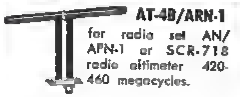
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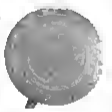


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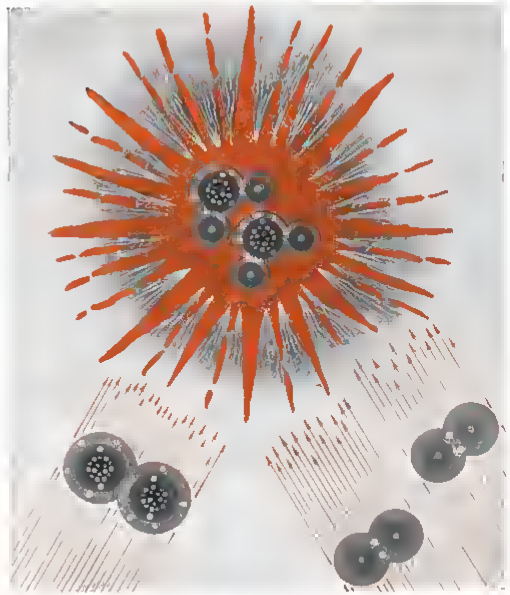
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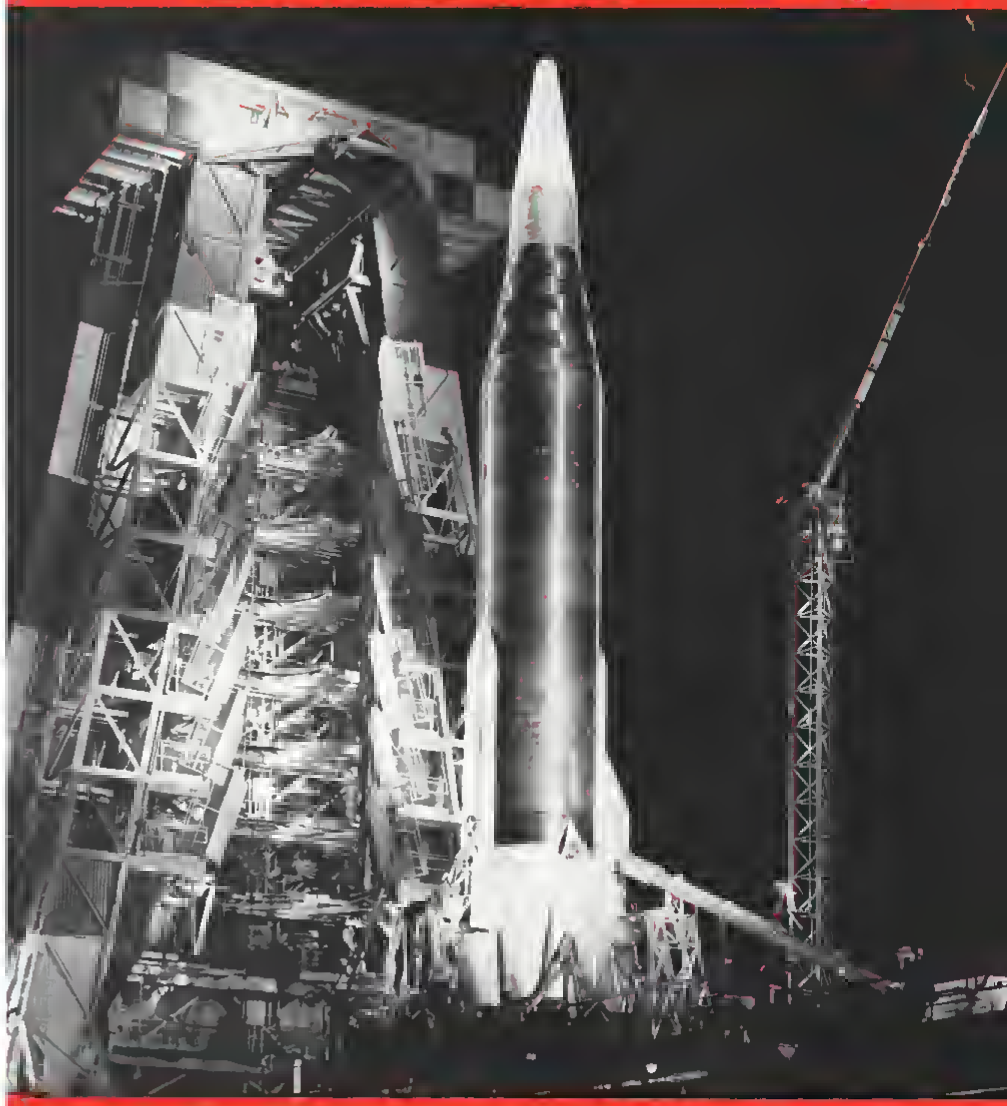
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84

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Atlas with RVX-2A Prepared for the 12th Launch in the RVX Ablative Materials Test

BUYERS' GUIDE FOR 1961



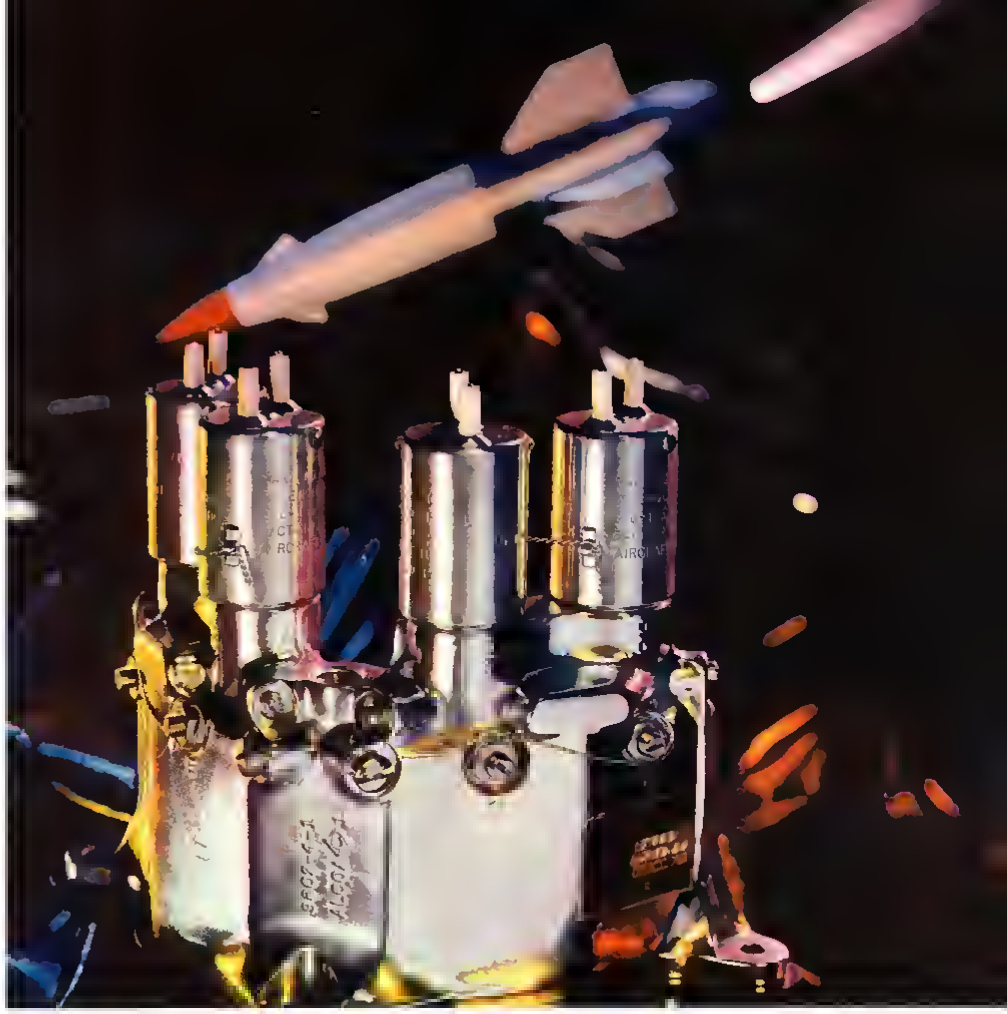
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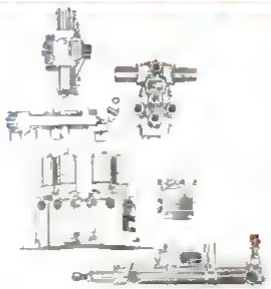
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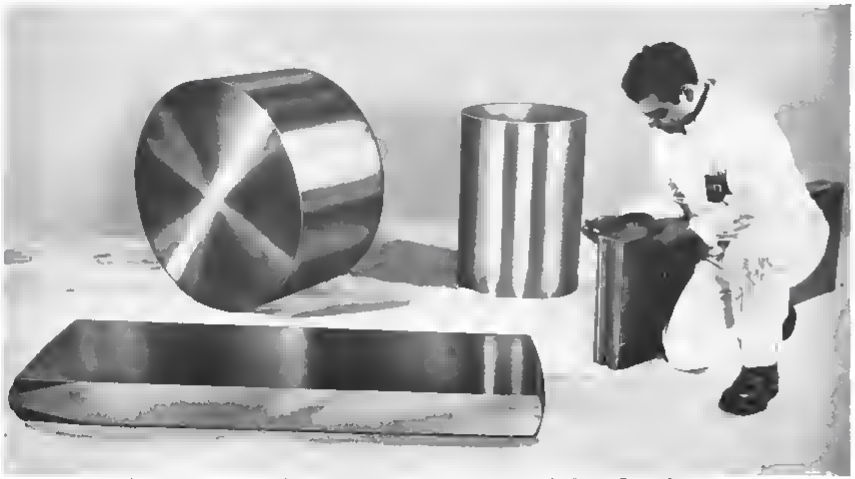




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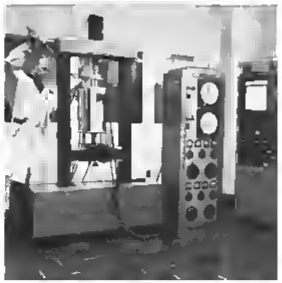
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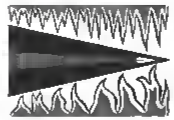
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Compartment Environmental Control Systems
Compartment Pressure Controls
Cooling Effect Control Systems
Cryogenic Liquid Modulating Valves
Ground Support Equipment Cooling Systems
Mass Flow Controls
Pressure Suit Control Systems
Regenerative Atmosphere Control Systems
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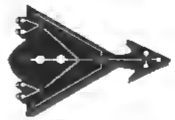
FLIGHT AND PROPULSION CONTROL SYSTEMS AND COMPONENTS

Air Data Computers
Angle-of-Attack Computing Systems
Computing Servo Systems
Cryogenic and Corrosive Propellant Controls
Inlet Shock Wave Position Controls
Air-to-Air Missile Launch Zone Computers
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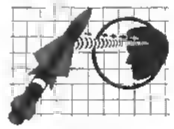
TEMPERATURE CONTROL SYSTEMS AND COMPONENTS

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Brake Drum Overheat Control Systems
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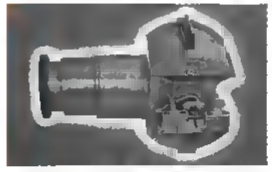
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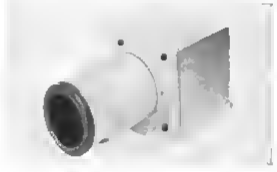
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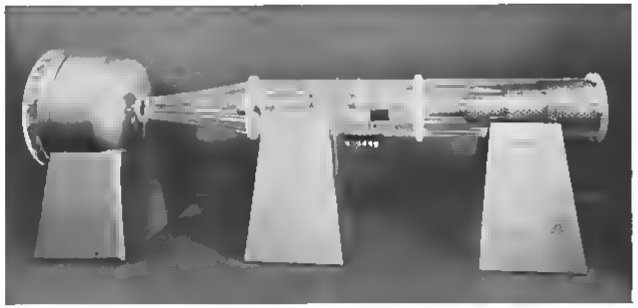
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Use-proven RESEARCH TOOLS from AVCO

ACOUSTIC NOISE EQUIPMENT

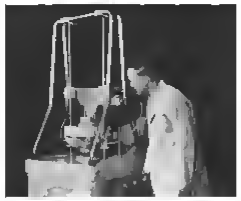
ACOUSTIC NOISE GENERATOR AG-012 simulates the random noise of rocket engine firing. Other Avco noise test systems available in a variety of configurations to meet specialized requirements. Systems available with random noise ouputs of 163, 150, 140 and 120 db. Complete capability and experience available to build custom systems for individual requirements through the utilization of standardized components.



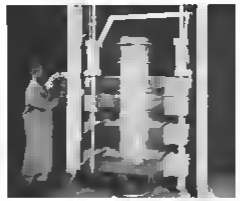
SHOCK TEST EQUIPMENT



AVCO's SM-005, a compact, pneumatically controlled shock test machine for component testing. Provides sawtooth, triangular and half sine pulses to 3000 g's force, extra capability to meet new pulse needs. Recycles automatically 30-lb capacity (50-lb with special impact devices). High degree of repeatability.



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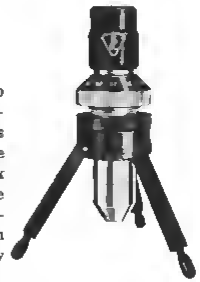


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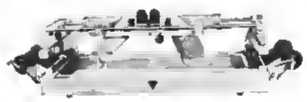
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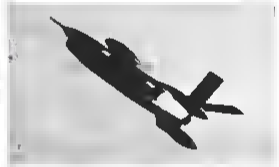
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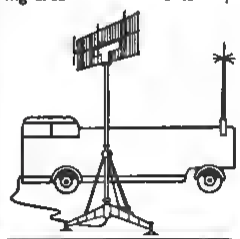
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Length	17.71 ft.
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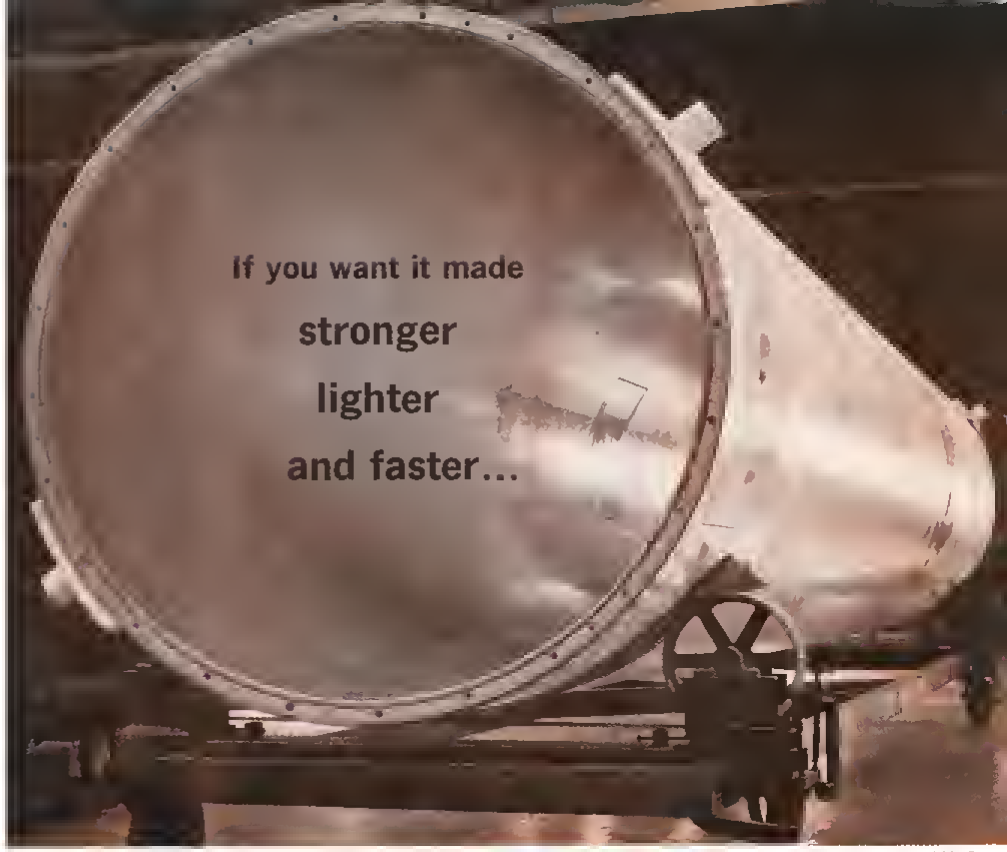
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CONTAINER FOR A POLARIS THE NAVY'S FLEET BALLISTIC MISSILE

... it's a job for Zenith Plastics

This missile container, approximately 30 feet in length, was originally planned for other material Zenith engineers proved that resin-bonded glass fiber could do the job better. And here you see the first reinforced plastic wound structure ever made on so large a scale

Time after time, Zenith has been able to demonstrate the superiority of reinforced plastics over other materials—in strength, lightness, thermal qualities, and in actual cost

For example, Zenith has developed a "magic million" plastic structure ideal for rocket motor cases It now has a strength-to-weight ratio in excess of 1,000,000 inches, the "magic million" that has been sought for years by missile makers A case made of it would be 25% lighter than if made of steel, at a cost 35% less And Zenith has R & D projects that involve advances even more dramatic

Zenith thrives on this kind of progress We've learned to form resin-bonded glass fiber into virtually every shape and size And to turn out precision components on a production-line basis Almost always, the use of reinforced plastics results in simplified design and more economical tooling.

Isn't this modern material just the thing for the component *you're* interested in? We'll be glad to talk it over with you ... and give you all the facts about our research, engineering, and production capability

World's largest plant producing large fiber glass reinforced plastics components for U S Air Force U S Army and U S Navy, capabilities in Research and Development, Engineering, Production Quality Control and Testing Applications include Airframes, Containers, Fins Insulations Launchers, Liners, Missile Components Moldings, Nose Cones, Pressure Vessels, Radomes Rocket Engine Cases, Rocket Nozzles, Vanes and Antenna Reflectors.

ZENITH PLASTICS COMPANY
1600 West 135th St , Gardena Calif , Subsidiary of Minnesota Mining and Manufacturing Company (3M)

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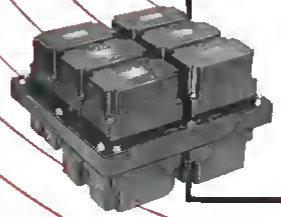
Philco Scientists Conducting One of the Tests on Courier Communication Satellite

SUPERIOR ACCURACY

in heat control systems

Extremely compact proportional and switch-type heat control systems from Magnetic Controls Company are accurate to within .01° F. and are available in models to handle a wide variety of output requirements. Typical applications include gyros, inertial platforms, jet aircraft windshield anti-icing and anti-fogging systems, aircraft cabins, and guidance shipping containers.



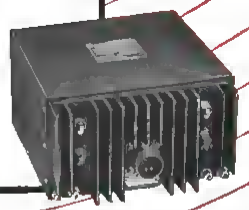


in voltage monitoring systems

The thousands of critical voltages in computers — which must be monitored in order to track missiles accurately — led to the voltage monitoring systems developed by Magnetic Controls Company. Use of highly sensitive, rugged magnetic amplifiers in these systems assures super-accurate response from varying load currents and line voltages.

in power supplies

Ultra reliable static power supplies from Magnetic Controls Company utilize magnetic amplifier circuitry for extreme ruggedness, stability and high efficiency. These supplies can be styled for 19" relay rack or custom mounting to meet the requirements of ground computer or airborne applications.



If you have applications requiring super-accurate heat regulating, voltage monitoring or power supply systems, it will pay you to contact Magnetic Controls Company. Write or phone today for complete information.

MAGNETIC CONTROLS COMPANY

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Heat Control Systems • Static Inverters • Voltage Monitoring Systems

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PROFESSIONAL REGISTER EMPLOYMENT INQUIRY *(Strictly Confidential)*

Please complete this card, fold, staple and mail. The information you give constitutes the first phase of the Professional Register Program and will enable our professional staff to make a preliminary evaluation of your abilities. All inquiries will be answered immediately. When you complete the Program, the inventory of your talents and capabilities will be recorded on over 20 electronic data-cards available for instant use in guiding your future progress at HUGHES FULLERTON.

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Education	BS	MS	PhD	Date (s)		BS	MS	PhD	Date (s)
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ME	☐	☐	☐	_____	Other_____	☐	☐	☐	_____
Mathematics	☐	☐	☐	_____		☐	☐	☐	_____

School (Highest Degree)_____

FOLD

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(please check boxes)

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- ☐ Electron Tubes
- ☐ Electronic Circuitry
- ☐ Telemetry
- ☐ Circuit Theory
- ☐ Radar
- ☐ Power Generation
- ☐ Power Transmission
- ☐ Servomechanisms
- ☐ Microwaves
- ☐ Solid State Physics
- ☐ Electromechanical Systems
- ☐ Other _____

FUNCTIONS PERFORMED
(please check boxes)

- ☐ Research
- ☐ Development/Design
- ☐ Technical Writing
- ☐ Project Management/Supervision
- ☐ Administrative Staff Support
- ☐ Systems Analysis
- ☐ Testing/Process Control
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- ☐ Operations Research
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Are your talents being recognized?

Most engineers have had to face an unpleasant fact. Often an employer will hire from outside to fill a supervisory post. Entirely qualified men "inside" are passed over. The problem is generally one of communication. The employer simply does not have adequate knowledge of his employees' abilities and promise.

Hughes Fullerton's new Professional Capabilities Register reflects the complete engineering orientation of this fastest-growing Hughes activity. (From 800 to nearly 6,000 people since 1957. Planned, *scheduled* growth.)

The Register makes instantly available a complete record of every individual's abilities, interests and accomplishments. Previously hidden talents can now be put to use. Often these can mean the difference when reassignments or promotions are being made. Your potentials become a very real resource of Hughes Fullerton Research and Development Staff.

Areas covered in the Register range from language skills through patents to books and articles published. It includes teaching experience, professional affiliations. All data is kept up to date and handled by automatic data processing equipment for utmost efficiency.

Hughes Fullerton's philosophy of giving precedence to the needs of engineers has worked well. Hughes Fullerton was first with three dimension radar, a major breakthrough in the state of the art. Other vital areas of interest include advanced data processing and electronic display systems.

These are a few reasons why you should investigate Hughes Fullerton. Openings exist at several experience levels for a variety of engineering specialties. For full information fill out the post card and mail it today!

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Rugged enough to survive shock from a sledge hammer, Nortronics-Norwood subminiature rate gyros require no warm-up, stand ready from −65°F to +200°F. Despite their small size (2″) and weight (4 oz), these fundamental sensors surely and precisely feed the missile brain a stream of subtle signals. Out of the box, into the bird, they are set to "keep her on track".

Engineered and manufactured under the tightest standards of performance and reliability, gyros from Nortronics — rate, integrating, navigational — set industry marks. Terrier, Tartar, Bomarc, Nike Zeus and Polaris all get a hand on the helm from Nortronics.

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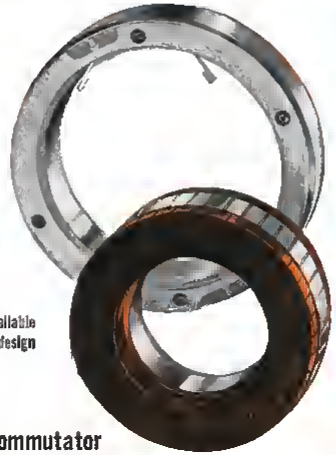
From 0.1 to 3000 pound-feet

High torque-to-inertia *at the output shaft*

A typical stabilization application requiring a peak torque of 60 ounce-inches now uses an Inland torquer with a torque-to-inertia ratio of 5350 radians/sec ². This torquer replaces a gear train servo motor that had a ratio at the output shaft less than *one-tenth* that of the Inland torquer.

Direct drive promotes system accuracy

Direct drive without servo motor gear trains reduces friction and eliminates backlash and elasticity, leading to better over-all system accuracy.



COMPACT PANCAKE SHAPE now available in d-c torquers through exclusive Inland design



Exclusive commutator and brush rigging design

Patented features enable Inland to combine the compact pancake configuration with low-power input —high-torque output characteristics of a d-c torquer.

TYPICAL RATINGS FOR 20 OZ-IN. TORQUERS

	T-1321-D	T-1321-B	T-1321-C
PEAK TORQUE, OZ. IN.	20	20	20
VOLTS AT PEAK TORQUE, STALLED AT 25°C	31.4	24.8	39.6
AMPS AT PEAK TORQUE	1.82	2.25	1.46
TOTAL FRICTION, OZ. IN.	0.5	0.5	0.5
ROTOR INERTIA, OZ.-IN.-SEC.²	.001	.001	.001
WEIGHT, OUNCES	5	5	5

Inland Power Amplifiers

Inland makes a complete line of power amplifiers for systems duty with Inland torquers whether in airborne, shipboard, or ground service. Specification sheets available on request.

For complete data on these or other d-c pancake torquers up to 3000 pound-feet output, address Dept. AW Inland Motor Corporation of Virginia, Northampton, Massachusetts.

Factory: Radford, Virginia

INLAND MOTOR CORPORATION OF VIRGINIA

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From Avco/Nashville... structures to order

Avco/Nashville specializes in applying engineering imagination to a wide variety of structural problems. One result is an exciting new family of structures offering features that go far beyond the limitations of the original materials.

Nashville Division is now producing honeycomb structures that have unusual strength and heat resistance, yet are light enough to float on water. Employing its new *Avcoramic* process, Nashville Division makes *Avcomb* stainless steel panels for the B-70 supersonic bomber. It also produces aluminum honeycomb components for Convair 880 and 600 jet transports, and radar reflectors of fibre glass, aluminum and stainless steel sandwich construction.

Although the first applications for these jet-age materials have been in missiles and supersonic aircraft, Avco development engineers are actively investigating new uses. These include communications shelters, droppable buoys, lightweight ground support equipment, and many other applications requiring a high strength/weight ratio.

The engineering staff of the Nashville Division is ready to assist you in adapting new methods and new materials to meet your requirements for lightweight structures.

Avco / Nashville

For full information, write General Marketing Manager—Structures Nashville Division, Avco Corporation, Nashville 1, Tennessee.

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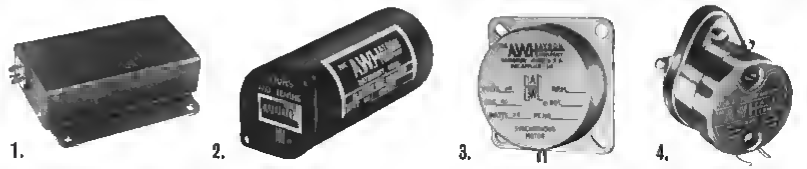
The Aviation Week

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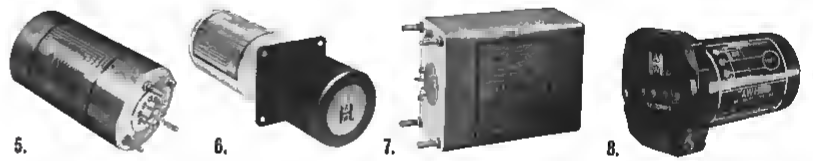
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PRECISE ■ RELIABLE ■ COMPACT ■ THE A W HAYDON COMPANY DESIGNS AND MANUFACTURES EVERY TYPE AND SIZE OF PRECISION TIMING DEVICE. ONLY A FEW OF OUR STANDARD MODELS ARE SHOWN HERE. THERE ARE MANY OTHERS, AS WELL AS CUSTOM DESIGNS TO MEET THE MOST RIGID SPECIFICATIONS. IF YOU HAVE A SPECIFIC TIMING PROBLEM, WHY NOT GET IN TOUCH WITH US.



1 REPEAT CYCLE TIMER, SUB-MINIATURE, HERMETICALLY SEALED 1/4 THE SIZE OF STANDARD UNITS, 1/2 THE WEIGHT. UP TO 8 SWITCHES. DC OR 400 CYCLE. BULLETIN RC-301. 2 ELAPSED TIME INDICATOR. SUB MINIATURE, HERMETICALLY SEALED. ACCURACY ±0.1% AT RATED FREQUENCY. MAXIMUM WEIGHT 4 3/4 OUNCES. BULLETIN ET-602. 3 TIMING MOTORS, SYNCHRONOUS 60 CYCLE 30 OUNCE–INCHES RUNNING TORQUE AT 1 RPM. WEIGHT 5 OUNCES. BULLETIN MO-806. 4 DC TIMING MOTORS. WIDE RANGE OF VOLTAGES. ALSO AVAILABLE IN LOW CURRENT AND ROTARY ACTUATOR MODELS. BULLETIN MO-805.

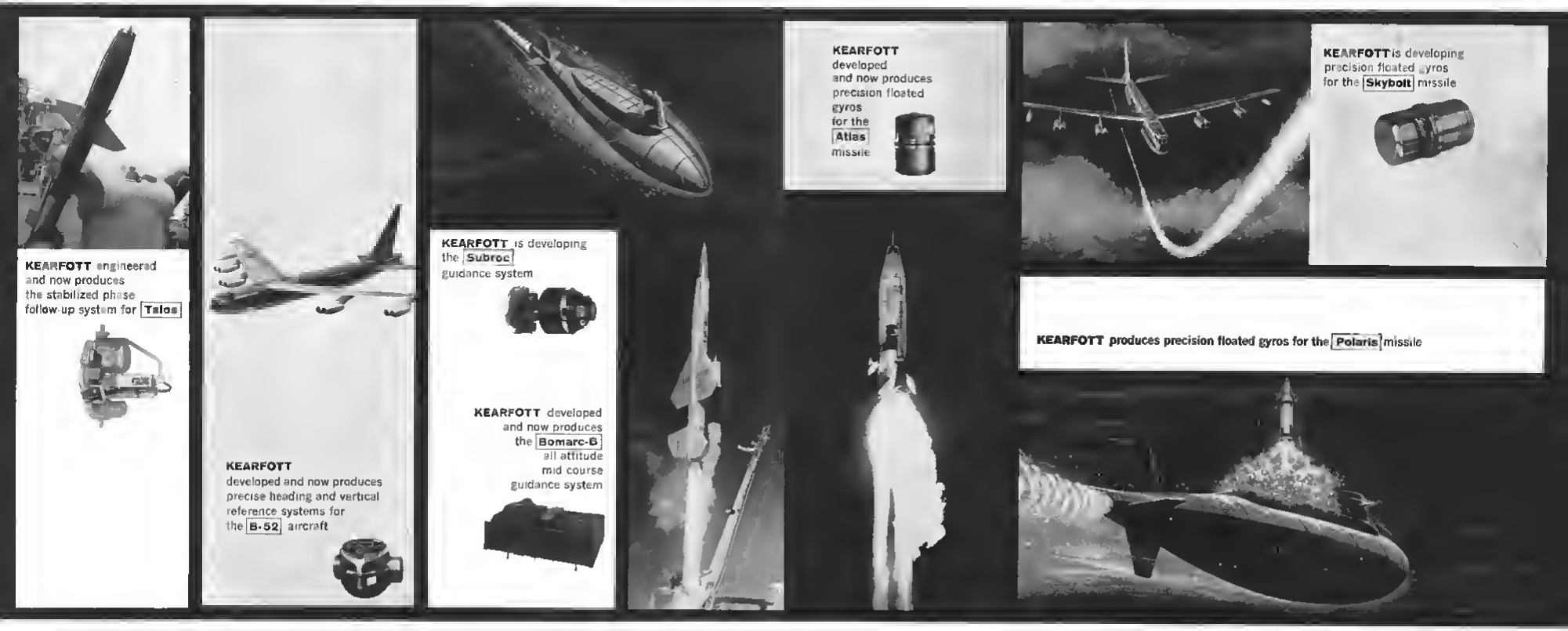


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NEXT QUESTION . . .

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The RADAR QUANTIZER Provides Answers

By utilizing the RADAR QUANTIZER®, the Army Ordnance Corps can track the Pershing missile in flight with a position plot resolution of ±2½ feet — a resolution heretofore impossible. The Quantizer, developed under contract of the Army's Diamond Ordnance Fuze Laboratories, is a millimicrosecond time interval meter. It converts the radar electrical signals into digital code format and feeds a storage tape, *as fast as the dynamic data occurs*. As a result, engineers can follow the missile's exact flight path on the ground with the aid of digital computing equipment — making optimum use of the radar equipment's full capability, down to the Quantizer's instantaneous resolution of ±10 millimicroseconds!

If you have data processing requirements where it is desirable to measure time intervals down to ten millimicroseconds or less, and read the result out in digital format *while the data occurs*, contact Computer Equipment Corp. for full details on how the QUANTIZER can be applied to your system.

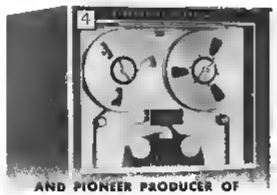


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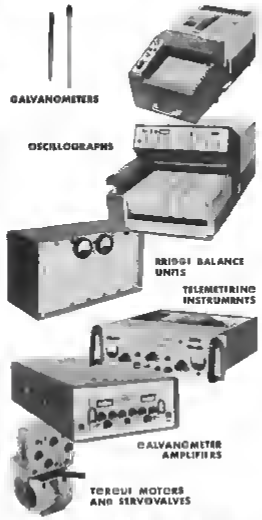
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INERTIAL COMPONENTS

SUB-SYSTEMS AND FLIGHT TEST EQUIPMENT

RATE GYROSCOPES



TYPE M-100 is the latest in Honeywell's family of miniaturized high performance rate gyros. It features constant damping (0.6 at −65°F) over a wide operating temperature range without the use of heaters.



TYPE GN or "Golden Gnat" is another of Honeywell's high performance gyros and has been in full production in a wide variety of miniature rate packages over the past three years.



TYPE JR, another rate gyro of proven reliability, features a unique quadri-lever spring suspension for high sensitivity and a wide full range under severe environmental conditions; TYPE JRT is available with heaters for those critical applications requiring constant damping. TYPE K Rate Measuring Gyro features a linear output signal that is proportional to the input rate within 0.25% full scale.

INERTIAL SUB-SYSTEMS



F-102 THREE-AXIS RATE GYRO SYSTEM Instantaneous detection of aircraft turning rates about the roll, pitch, and yaw axes is accomplished by three Model JR gyros. The resulting output signals teamed with other equipment, make possible uniform pilot control response for all flight conditions.



F-106 THREE-AXIS TURN RATE TRANSMITTER This sub system features three Gnat miniaturized gyros that detect rate of turn about the roll, pitch, and yaw axes and responds with an output signal to provide polarity reversing D-C outputs proportional to the corresponding input rate.



CONTRACT ENGINEERING AND MANUFACTURING



Honeywell's Boston Division will design from customer specifications or prototypes, or manufacture to customer's drawings. Typical of the completed programs in this area are CN-100 Compass-controlled Stable Reference Platform for a bombing system (shown at left), and Displacement Gyros for the A1A/BNC Bombing Navigational Computer.

ACCELEROMETERS



TYPES LA-100, LA-300 are low cost, rugged, linear, non-pendulous units with potentiometer outputs.



TYPE LA-200 is a miniaturized, pendulous, linear accelerometer which is fluid-damped and mechanically compensated. Output signal is provided by a variable reluctance signal generator.



TYPE LA-500 is a linear, non-pendulous, fluid-damped potentiometer output device that features constant damping, linear response, (−65° and +175°F).

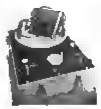


TYPE LA-600 is a linear, non-pendulous A-C accelerometer in which pick-off friction is eliminated to permit resolution of extremely low level inputs. This accelerometer features magnetic damping for near constant damping ratio (−65°F to +250°F).



TYPE LA-700 linear, non-pendulous accelerometer is a complementary unit to the LA-600 for those applications requiring a high full scale range combined with a low natural frequency.

TEST EQUIPMENT



HONEYWELL RATE GYRO TEST SET designed for use by field personnel for the static analysis of rate gyros, rate gyro demodulator amplifier, and three-axis rate gyros packages. This equipment meets the design requirements of MIL-T-945 and environmental test requirements outlined in MIL-E-4970.

SPECIALIZED TEST EQUIPMENT such as Radar Range Servo Test Sets, Frequency Response Analyzers, and other electronic equipment can be designed and manufactured to meet your requirements.

FLIGHT TEST EQUIPMENT



TYPE DV-4 POWER SUPPLY-DEMODULATOR (115 volt, 400 cycle, single-phase primary power available) energizes 1 to 3 Honeywell Rate Measuring Gyros, Type K, and translates the gyro output signals to a form suitable for use with recording oscillograph galvanometers or tape recorders.

Write to Minneapolis-Honeywell, Boston Division, Dept. 11B, 40 Life Street, Boston 35, Massachusetts

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Stoner's SMR has broken through the thermal sealant barrier that has laced the missile and rocket industry for many years.

The varied shapes and forms that this versatile material has taken includes chamber sealants, liners, insulation for head closures, high temperature insulation prefabricated proofed sleeves and bladders, as well as other critical applications for rocket components.

SMR is also being used to advantage in plastic molding compounds and pre-pregged laminates.

'SMR is a special Silicone Modified Rubber produced by Stoner Rubber Company, Inc.

Photo of Rocket Chamber courtesy of Aerojet General Corporation.





SMR PROVIDES A TOUGH THERMAL LINER AND ERIBOND SEALANT FOR MISSILE AND ROCKET CHAMBERS. This unique rubber has exceptional high bond strength at elevated temperatures.

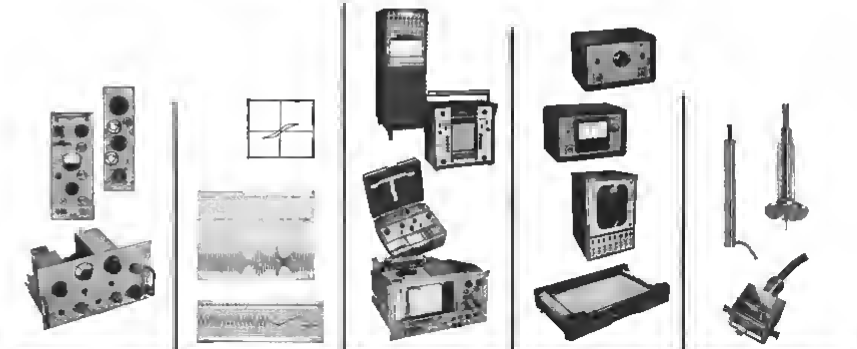
FREE 1000 CATALOG Technical information on SMR and other Stoner products in this 24 page catalog will help you solve your rubber problems.

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meet YOUR oscillographic recording needs



INPUTS	FREQUENCY RESPONSE (WRITING METHOD)	PACKAGING NO. OF CHANNELS	ACCESSORIES	TRANSDUCERS
INTERCHANGEABLE PLUG IN PREAMPS '850', '350', '150' STYLE Carrier — Phase Sensitive Demodulator — DC Coupling — Low Level types **'350', '150' STYLE** 400 cycle Frequency Deviation — Logarithmic types **'150' STYLE** AC DC — AC Wattmeter — RMS Volt /Ammeter — Frequency Meter — Stabilized DC — Triplexer types **SINGLE CHASSIS 8- OR 8-CHANNEL AMPLIFIERS** '950' series high and low gain types — '650' medium gain type for Sanborn or other optical recorders.	**DC TO 150 CPS** with heated stylus traces on rectangular coordinate charts. **DC TO 5000 CPS** with new '650' optical instant readout recorder **X-Y RECORDING** of writing speeds up to 2500"/sec with the Model 670 optical X-Y recorder	**PORTABLES** single channel 21 lb. brief case systems — either DC amplifier (Model 299) or AC strain gage amplifier (Model 301) **MODEL 320** separate DC amplifiers. 4 speeds, 50 mm wide channels **RACK MOUNTED** 2 channel Metrisite 287 system with plug in preamps. Mounts in 10½" rack space or separate portable case **1- TO 18 CHANNEL MOBILE SYSTEMS** — 150'-350' and '850' series with plug in preamps. '950' system with 6- or 8-channel amplifier. '650' system with 6- or 8 channel amplifier and optical recorder.	Chart Viewer — 6 channel 17" Monitoring Oscilloscope — Monitor Meter — Phase Shifter — 4- to 32-channel event recorders.	For Linear displacement — Linearsyn Miniature probe-style units — Linear velocity — LVsyn- many standard or special models — small single ended or differential pressures — 267, 268 Series.



Complete details of Sanborn recording instruments are available from Sanborn Sales Engineering representatives located in principal cities throughout the United States, Canada and foreign countries — as well as

SANBORN COMPANY INDUSTRIAL DIVISION
175 WYMAN STREET, WALTHAM 54, MASS.

FAIRCHILD DIFFUSED SILICON TRANSISTORS

Providing an unmatched combination of speed, power and reliability in computer switching and in RF and video amplifiers and oscillators. Today's widespread preference for diffused silicon transistors in high-performance, high-reliability applications has resulted from their unique combination of characteristics: very high gain-bandwidth product, large power dissipation, low saturation resistance, uniformity of parameters and outstanding reliability (300°C stabilization is standard Fairchild production practice). Their high performance applies over a very wide range of current, frequency and temperature, hence one Fairchild type can replace numerous earlier, more restricted types. Fairchild pioneered large-scale production of diffused silicon transistors and today offers the broadest line.

Types	Description	JEDEC Outline	f_T Typical	P_C @ 25° C Case Temp	P_C @ 25° C Free Air Ambient	h_{FE} Min.	h_{FE} Max.	h_{FE} Cond. I_C	h_{FE} Cond. V_{CE}	$V_{CEX(SUS)}$	V_{CBO}	V_{EBO}	$V_{CE(SAT)}$ (Max.)	$V_{CE(SAT)}$ Cond. (I_C)	$V_{CE(SAT)}$ Cond. (I_B)	$V_{CE(SAT)}$ (Max.)	$V_{CE(SAT)}$ Cond. (I_C)	$V_{CE(SAT)}$ Cond. (I_B)	I_{CBO}** Maximum @ 25°C	I_{CBO}** Maximum @ 150°C
2N696† R 2N697†	General purpose types for switching RF and DC applications over a wide current range	TO-5	90 mc 120 mc	2 watts	0.6 watt	20 90	60 120	100mA 150mA	10V 10V	40V	40V	5V	1.3V	150mA	15mA	1.5V	150mA	45mA	1.0μA	100μA
2N1420	High gain general purpose types for switching RF and DC applications over a wide current range	TO-5	160 mc	2 watts	0.6 watt	100	300	150mA	10V	30V	60V	5V	1.3V	150mA	15mA	1.0V	150mA	50mA	1.0μA	100μA
2N696 R 2N698	High voltage types particularly suited to video amplifiers and RF oscillators	TO-5	90 mc 130 mc	2 watts	0.6 watt	90 90	120	150mA 150mA	10V 10V	90V	120V	5V	1.3V	150mA	50mA	5V	150mA	15mA	2.0μA	200μA
2N706†	Logic transistor for very high speed switching in low current saturated circuits	TO-18	400 mc	1 watt	0.3 watt	20		10mA	0.5V	20V	25V	3V	0.6V	10mA	1mA	0.5V	10mA	1mA	0.5μA	30μA
2N707	VHF mixer/amp type	TO-18	45% @ 200 mc*	1 watt	0.3 watt	8		10mA	1.5V	30V	56V	4V	0.8V	50mA	5mA	0.6V	15mA	1mA	5μA	
2N1131 & 2N1132	PNP complements to the 2N696 and 2N697 suitable for identical uses in opposite polarity	TO-5	50 mc 60 mc	2 watts	0.6 watt	15 90	45	150mA 150mA	10V 10V	−30V	−40V	−5V	1.5V	150mA	15mA	−1.5V	150mA	15mA	1.0μA	100μA
2N1252 & 2N1253	Low storage types, optimized for high current saturated switching circuitry	TO-5	90 mc 100 mc	2 watts	0.6 watt	18 90	45	150mA 150mA	10V 10V	20V	30V	5V	1.5V	150mA	15mA	1.5V	150mA	10mA	10μA	600μA
2N717 R 2N718	General purpose types for switching RF and DC applications over a wide current range (Small package)	TO-18	90 mc 120 mc	1.5 watts	0.6 watt	20 60	120	150mA 150mA	10V 10V	40V	40V	5V	1.3V	150mA	15mA	1.5V	150mA	15mA	1.0μA	100μA
2N718 & 2N720	High voltage types particularly suited to video amplifiers and RF oscillators. (Small package)	TO-18	60 mc 120 mc	1.5 watts	0.4 watt	20 90	120	150mA 150mA	10V 10V	90V	120V	5V	1.3V	100mA	10mA	5V	150mA	15mA	1.0μA	200μA
2N1613	A UNIVERSAL TYPE Fast switching (log c and high current) Amplifiers (low level low noise wideband VHF driver).	TO-5	400 mc	3 watts	0.6 watt	40 35 20 20 20		150mA 50mA 0.1mA 500mA 10mA	10V 10V 10V 10V 10V	50V	75V	7V	1.3V	150mA	15mA	1.5V	150mA	15mA	10mμA***	20μA
2N1711	Very high beta universal type Similar to 2N1613	TO-5	120 mc	3 watts	0.6 watt	100 50 35 30	300	150mA 10mA 0.1mA 500mA	10V 10V 10V 10V	40V	30V	7V	1.3V	150mA	10mA	1.5V	150mA	15mA	10μA†	12μA

†These transistors to military specification requirements. *Oscillator efficiency. **I_{CBO} measured at 50% of V_{CBO}. ***I_{CBO} measured at 80V. ††For all types $\beta \leq 100$.

A number of additional high performance types are scheduled for announcement in the near future.

FAIRCHILD SEMICONDUCTOR CORPORATION

ADDITIONAL DATA AVAILABLE ON INDIVIDUAL SPECIFICATION SHEETS

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FAIRCHILD DIFFUSED SILICON PLANAR DIODES

You can now get volume delivery—in any quantity—on all types in the Fairchild diode catalog. Even the very highest performance types are now immediately available as a result of Fairchild's Planar Structure development and manufacturing breakthroughs. The combination of Fairchild's high-conductance Planar FD200 (100 mA at 1.0V; 50m*sec recovery) and Planar FD100 (2m*sec reverse recovery) will cover advanced switching applications at high and low current levels and speeds. The FD300 Low Leakage Diode is ideal for applications where speed is not of prime importance. New diffusion techniques developed by Fairchild successfully reconcile high conductance with fast switching, low capacitance and uniformity of parameters. Fairchild's Planar Structure with surface passivation assures you the ultimate in reliability in the entire Fairchild diode line.

INDUSTRY'S NEWEST, MOST ADVANCED TYPES (FD100, FD200 & FD300) PLUS THIS BROAD RANGE OF ESTABLISHED 1N NUMBERS*

Type	Description	Reverse Recovery Time (Max.)	Reverse Recovery Time (Cond.)	Maximum Power Dissipation	Capacitance at 0 Volts Bias (Max.)	Capacitance at 0 Volts Bias (Cond.)	Breakdown Voltage (Min.)	Breakdown Voltage (Cond.)	Reverse Current (Max.)	Reverse Current (Cond.)	Forward Voltage Drop (Max.)	Forward Voltage Drop (Cond.)
FD100	Ultra-fast computer diode	2m*sec	I_F = 10mA, I_R = 6V	250 mw	2.0μμf	@ V_R = 0V	75V	@ I_R = 5μA	1 μA 100μA	@ V_R = −50V, 25°C @ V_R = −50V, 150°C	1.0V	@ I_F = 10mA
FD200	A UNIVERSAL TYPE High conductance ultra fast	50m*sec	I_F = I_R = 30mA	250 mw	5.0μμf	@ V_R = 0V	200V	@ I_R = 100μA	1 μA 100μA	@ V_R = −15V, 25°C @ V_R = −15V, 150°C	1.0V	@ I_F = 100mA
FD300	High conductance low leakage diode			250 mw	8.0μμf	@ V_R = 0V	150V	@ I_R = 100μA	0.001μA 3.0 μA	@ V_R = −125V, 25°C @ V_R = −125V, 150°C	1.0V	@ I_F = 200mA

*ALL THESE SILICON PLANAR DIODES AVAILABLE FROM STOCK

ULTRA FAST SWITCHING PLANAR DIODES

1N903	1N906	1N914†	FD114
1N903A	1N906A	1N914A	FD115
1N906	1N907	1N915	FD116
1N904A	1N907A	1N916A	FD117
1N905	1N908	FD100	FD200
1N905A	1N908A	FD101	

Reverse recovery times from 2.0m*sec to 50m*sec. Forward conductance to 150mA at 1.0V. Capacitances 0.6μμf to 5.0μμf. Breakdown voltages up to 200V.

VERY FAST SWITCHING PLANAR DIODES

1N251†	1N927	
1N252	1N928	
1N925	FD237	
1N926		

Reverse recovery times from 75m*sec to 150m*sec. Forward conductance to 150mA at 1.0V. Breakdown voltages up to 120V.

FAST SWITCHING PLANAR DIODES

1N643†	1N792	1N808	1N843	FD251
1N643A	1N793	1N809	1N844	FD252
1N658	1N794	1N811	1N845	FD253
1N659	1N795	1N812	1N891	FD254
1N660	1N796	1N813	1N892	FD255
1N661	1N797	1N814	1N893	FD256
1N662.1	1N798	1N815	FD241	FD257
1N662A	1N799	1N816	FD243	FD258
1N663†	1N800	1N837	FD244	FD259
1N663A	1N801	1N837A	FD245	FD260
1N778	1N802	1N838	FD246	FD262
1N779	1N803	1N839	FD247	FD263
1N789	1N804	1N840	FD248	FD264
1N790	1N805	1N841	FD249	FD265
1N791	1N807	1N842	FD250	

Reverse recovery times from 0.2m*sec to 0.5m*sec. Forward conductance to 200mA at 1.0V. Breakdown voltages up to 240V.

SWITCHING PLANAR DIODES

1N625	1N934	FD214	FD219	FD226	FD233
1N626	FD112	FD215	FD220	FD229	FD234
1N627	FD113	FD216	FD221	FD230	FD235
1N628	FD212	FD217	FD222	FD231	FD236
1N629	FD213	FD218	FD227	FD232	FD266
					FD267

Reverse recovery times of 2μsec. Forward conductance to 100mA at 1.0V. Breakdown voltages up to 200V.

GENERAL PURPOSE PLANAR DIODES

1.0 to 50mA

1N456	1N990	1N456A	1N482@
1N457†	FD322	1N457A	1N483
1N458†	FD323	1N458A	1N483A
1N459†	FD324	1N459A	1N483B
1N461	FD325	1N461A	1N484
1N462	FD326	1N462A	1N484A
1N463	FD327	1N463A	1N484B
1N464	FD328	1N464A	1N485
1N619	FD329	1N482	1N485A
1N622		1N482A	1N485B

51 to 150mA

1N486	FD318		
1N486A	FD319		
1N486@	FD320		
FD311	FD321		
FD312			
FD313			
FD314			
FD315			
FD316			
FD317			

Over 150mA

1N676	FD338	FD348
FD678	FD339	FD349
FD330	FD340	FD350
FD331	FD341	FD351
FD332	FD342	FD352
FD333	FD343	FD357
FD334	FD344	FD358
FD335	FD345	FD359
FD336	FD346	FD360
FD337	FD347	FD361

Forward conductance to 300mA at 1.0V. Reverse leakage as low as 5nA. Breakdown voltages up to 250V.

†These Diode types to military specification requirements.

In addition to these 200 suits Fairchild silicon diodes are available to particular specifications for special customer requirements.

A number of additional high performance types are scheduled for announcement in the near future.

FAIRCHILD SEMICONDUCTOR CORPORATION

ADDITIONAL DATA AVAILABLE ON INDIVIDUAL SPECIFICATION SHEETS

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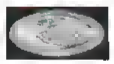
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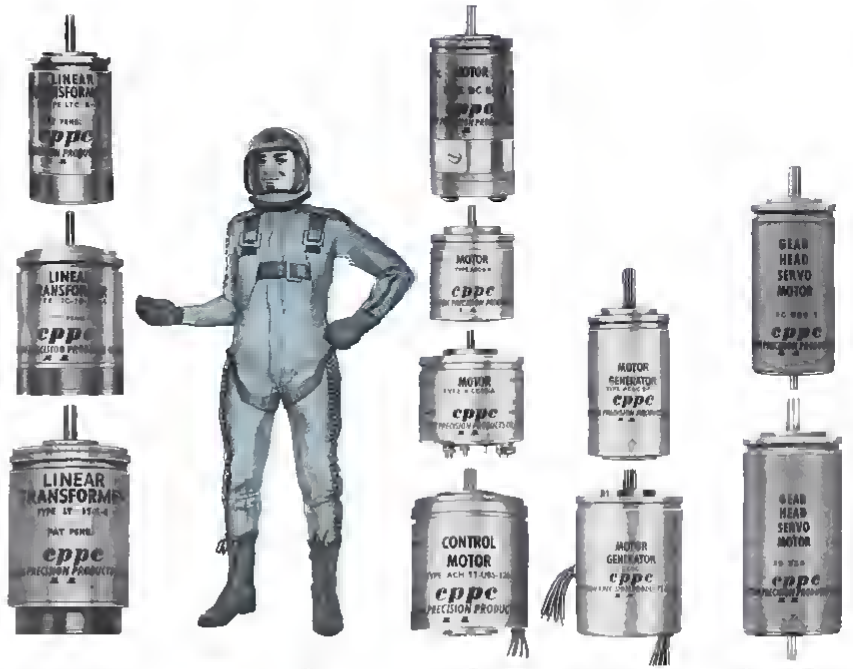
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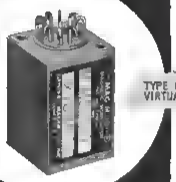
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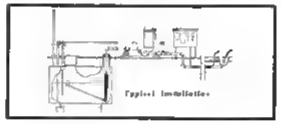
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Actual Size

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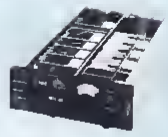


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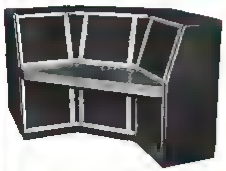
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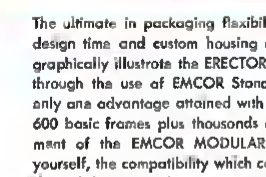
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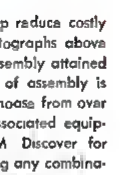


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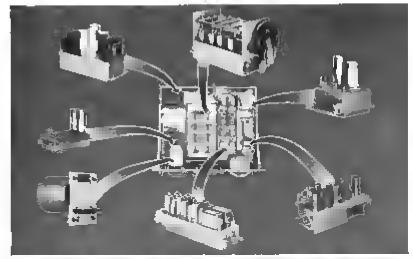
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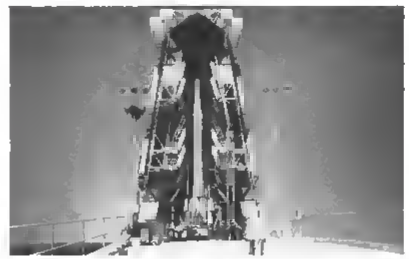
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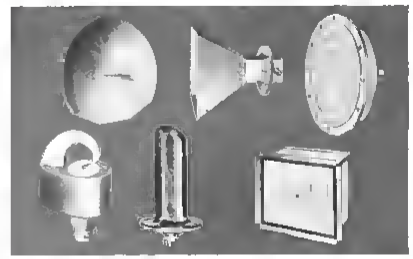
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Rating voltage	115/200V -400c
Coil Voltage	28V DC
Coil Current	1.5 amp.
Construction	Hermetically Sealed
Vibration	Over 20g to 2000 cps
Ambient (max.)	120°c
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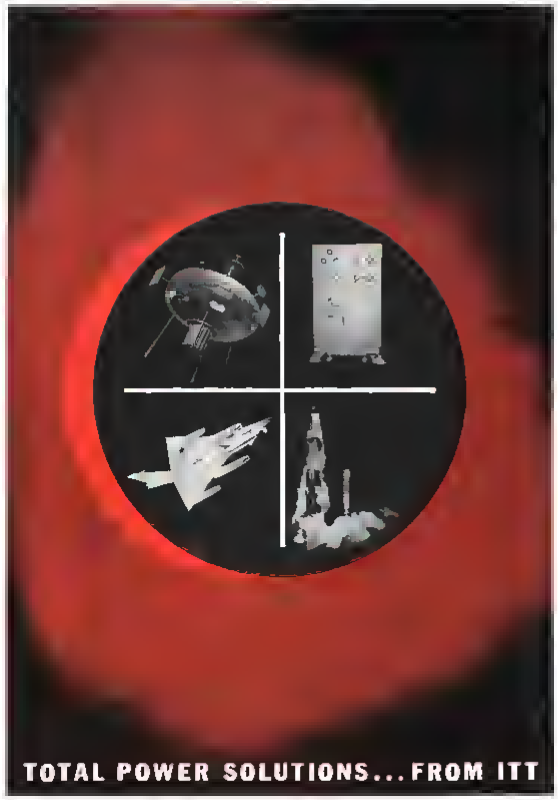
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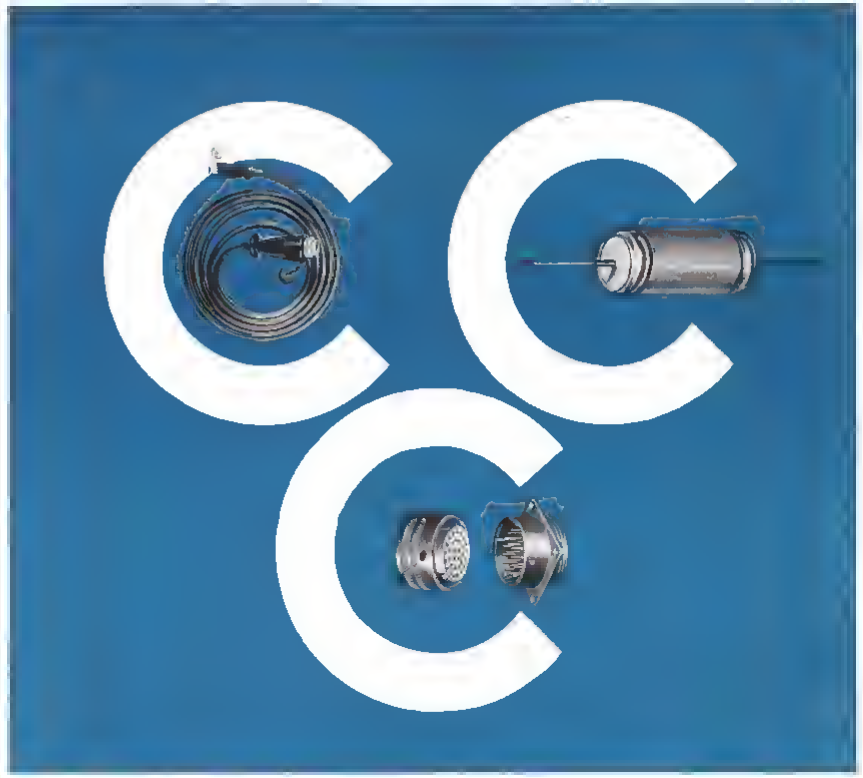
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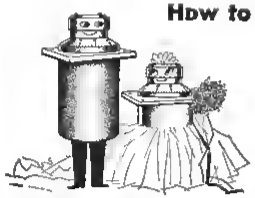




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Code	Binary*	Binary	GRAY	Binary-* Decimal	Degree-* Counting Binary-Decimal	Latitude/* Longitude Binary-Decimal
Number of Models	9	3	4	7	6	2
Total Count Range	2^7 to 2^{19}	2^7 to 2^{19}	2^8 to 2^{16}	10^2 to 10^6	360 to 360,000	36,000
Available Counts per Turn	128, 256, 512, 1,024	128	256, 512, 1,024	100, 1,000	100, 360, 360,000	10
Diameter	1¾"	1¾"	1¾", 2¼", 3¼"	2¼", 6¼"	2¼", 3¼", 3⅝"	2¼"
						

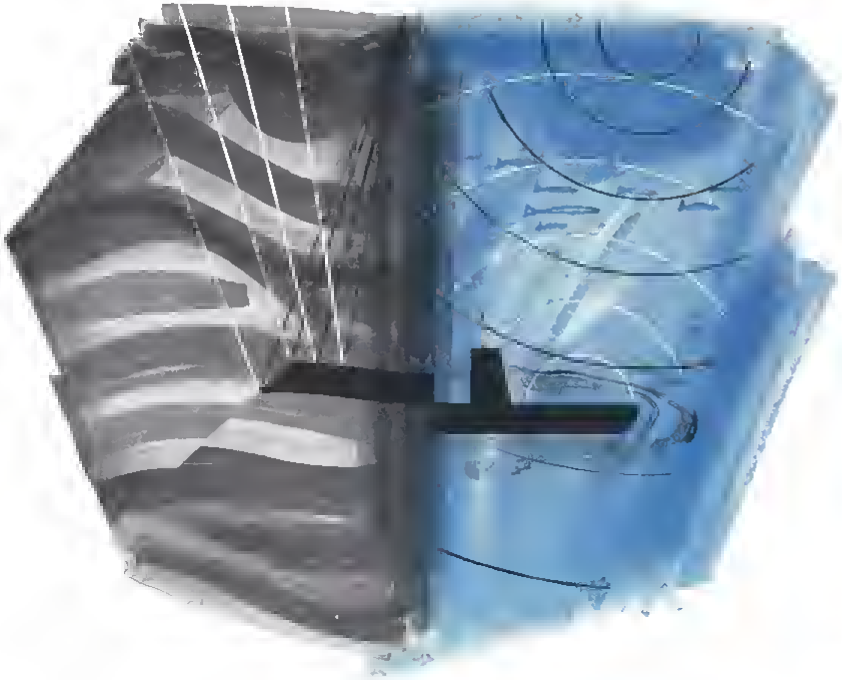
* V-brush logic included within encoder.

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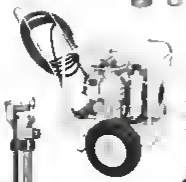
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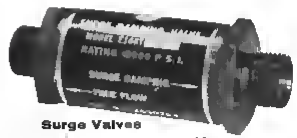
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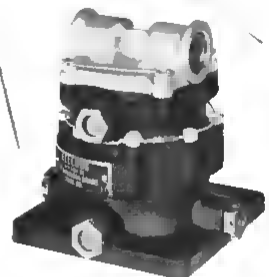
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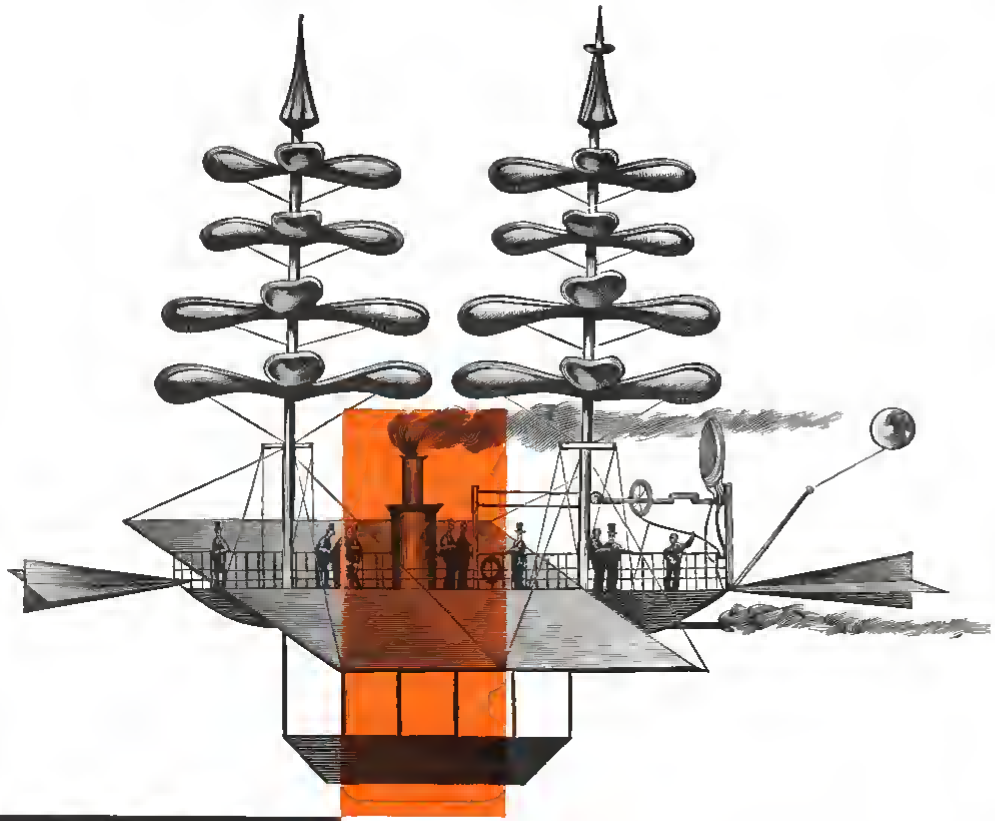
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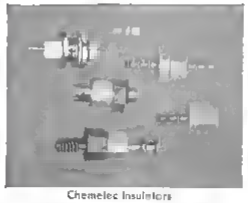
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279

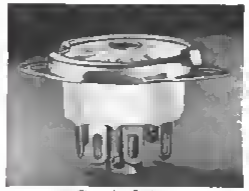
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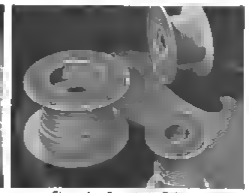
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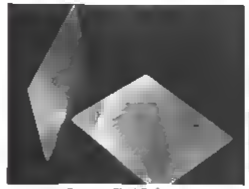
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Chemelec Connectors come in single pin compression mounted type with Teflon TFE insulator, miniature 9-pin tube base type with insulator of Teflon FEP and Kel-F† Individual connectors and test points available, coded with standard RMA colors.

Chemelec Tube Sockets are available in 7- and 9-pin miniatures . . . shield base and top end bottom-mounting saddle types. Insulators of Teflon FEP and Kel-F. Also, crystal sockets and compression-mounted miniature and sub-miniature tube and transistor sockets of Teflon TFE.

Chemelec Teflon Spaghetti Tubing is extremely flexible. 500 to 1000 volts/mil dielectric strength, lowest dielectric constant (2.0) and dissipation factor (0.0002). Comes in thin, standard, heavy-wall. Available in RMA colors.

Copper Clad Teflon for printed circuit boards and cable strips has a bond strength of 7 lbs./in. cu. to Teflon, is unaffected by 500°F solder. Offers uniform dielectric constant (2.05) and dissipation factor (0.002) . . . resists delamination. Available in sheet and tape form.

Plastic Stock Shapes and Intricate Parts, inserts, thin sections, threaded pieces available with precision tolerances. Excellent facilities and experience in compression and injection molding, extruding, machining of Teflon, Nylon, Delrin**, Kel-F and other industrial plastics.

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ELECTRONIC PRODUCTS

Find out more about what Garlock offers. Contact the Garlock Electronic Products representative near you. Call him, or write for catalog AD-169, Garlock Electronic Products, Garlock Inc., Camden 1, New Jersey.

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280

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on the wing...



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40 Ireco wing panel inserts on each Boeing 720 save $4,000 per jetliner

One of the first die castings accepted for stress on any jet airliner was this wing panel insert produced for Boeing by IRECO and now used on all Boeing jets, civil and military. It is unlikely that any die casting has ever before been subjected to such critical use.

The reliability of this jet-age pressure-tested, stressed vacuum-die casting is now established beyond doubt. Equally established is its economy. Each 720 requires 40 such panels. They were previously machined from aluminum plate. IRECO die castings, plus IRECO-engineered floating inserts of a radical new design, produced a better panel at a saving of over 75%. This amounts to more than $4,000 per craft!

Do you have any difficult die casting problems for stressed application to aircraft or missiles? Our engineering department would be pleased to discuss them with you.

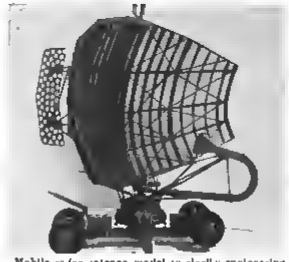
IRECO

INDUSTRIAL DIVISION

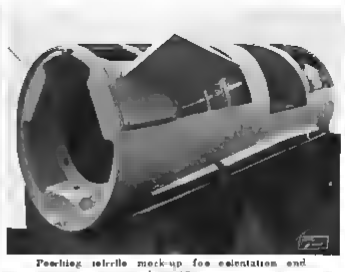
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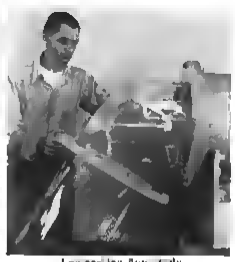
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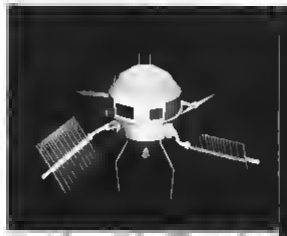
Mobile cryfer intecco model to clerify engineering problems preparatr & budget requirements



Pointing telerlle mock-up foo oriontation and tra ning



Engineering flow visualy metal speedr "dehigns



Scale rateillte model for IBM Space Train Washington D C

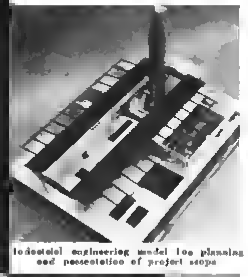


Customer Engineering Service helps you rove money speed completion of project

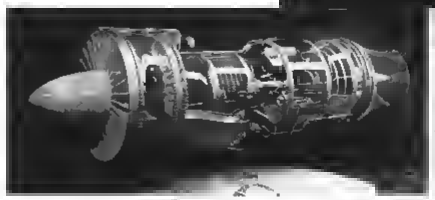
training aids, mock-ups, models and accomplishments in the AEROSPACE field.



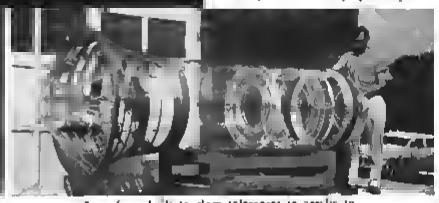
Lucrasee mistle trolsee, in reinforced plastic



Industrial engineering model foo planning and presentation of project steps



One of a series of detailed jet engine models at ¾ scale foo public relations and training



Nose Cone built to store telemeters to acrylic to reveal space conflicts in critical areas

Transparent full scale models to assist in "debugging" prototypes, models for wind tunnel test, launching site planning, human engineering study, and public relations are all part of our regular work. Because of our flexibility, such models can be produced on an urgent deadline basis, merely by referring the project to Atkins & Merrill.

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Reinforced Plastics Div., Bartlett St., Marlboro, Mass., HUntley 5-4120

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the only high purity silica fabric that offers all these features.

Physical and General Data on Types of SIL-TEMP Fabric Available

	Sil-Temp 82	Sil-Temp 84	Test Method
Weight, oz / sq. yd.	10.3 ± 1.0	19.5 ± 1.5	Weight of 6" x 6" piece
Breaking Strength, lb / in	Warp 22 Fill 20	Warp 35 Fill 30	ASTM D579-49
Silica Content, min	98%	98%	Haveg Method M-20
Moisture Content max	4%	4%	Cenco Moisture Balance
Roll Width, in	33½ ± ½	33½ ± ½	
Material Thickness (nominal)-in	0.013	0.028	
Areal Shrinkage, max.	5%	5%	6" x 6" piece ½ hour exposure at 1,800°F
Roll length (nominal), yd.	100	70	
Bagginess, max., in.	4	4	Unrestrained drop between two 4" rolls 20" apart
Melting Point, approx	3,000°F	3,000°F	

Other Operating Divisions: Chemical Super-Temperature Wires, Inc.—Burlington, Vermont — Haveg Division Division—Bridgeport, Connecticut | Chemical Chemical Standard Wilmington, Chemical — Haveg-Allyn Division—Akron, Ohio Haveg Corporation—Wilmington, Delaware — Hemisphere Products Corporation—Rio Piedras, Puerto Rico Reinhold Engineering & Plastics Co, Inc—Norwalk, California

The general data chart at left shows the unique properties that have made Sil-Temp an outstanding success as a reinforcement for plastics in missile and rocket compacts.

Sil-Temp has not only replaced bulkier and costlier materials but has shown superiority to asbestos, fiberglass, and other fibrous and non-fibrous organics, inorganics, and metallics.

Sil-Temp's higher quality is also evident in its more uniform dimensions, geometry, moisture content, density, and pH. AND Sil-Temp's quality is carefully guarded from raw material to final shipping destination.

Sil-Temp is shipped in 33¼ inch width rolls that are individually sealed in a moisture resistant envelope which serves as a humidity barrier and keeps out dirt and foreign matter. In addition each roll is packaged in a special cushioned container to prevent telescoping, crushing or abrasion. These precautions assure you of top quality.

For further information send for our Sil-Temp folder or write, wire, or phone Haveg's Chemical Materials Division. One of our experienced engineers will be happy to work with you on your particular application.

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Flexonics Thin Wall Stainless Steel Tubing is unique—developed by Flexonics engineers especially for the aero/space industries. Made in two types "Standard" in sizes from 1.00" to 6.00" O.D., "High Strength" in sizes from 1.50" to 6.00" O.D. Both types available to 12.00" on special order. Also tubing assemblies and complete ducting systems, both with and without flexible sections.



METAL HOSE and FLEXIBLE CONNECTORS

Flexonics manufactures the broadest line of corrugated stainless steel hose for aeronautical and missile applications—to absorb vibration, permit deflection, correct for misalignment, and compensate for thermal growth. Sizes to 6.00" I.D., larger on special order. Also specially fitted metal hose assemblies and flexible connectors.



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Both restrained and free flexing flexible joints, single or multi ply, lined and unlined. Restrained flexible joints in three basic types—gimbal, pin, and link—are standard in .25" increments from 1.00" to 2.75", in a variety of alloys. Larger sizes on special order. Unrestrained or free-flexing joints also to your specifications.

Flexonics has the manufacturing facilities—with unique capabilities in research, engineering, fabrication, cleaning, and qualification testing—for complete responsibility on aircraft and missile ducting systems.

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- ☐ Stainless steel tubing
- ☐ Flexible joints
- ☐ Aircraft and missile ducting systems
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You can produce and reliably repeat today's widest range of shock wave forms—half-sine, ¼ cosine, saw tooth, square and combinations—with CVC HYGE.

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NEW PRODUCTION LINE HYGE	Thrust to 15,000 lbs. acceleration 100G. Provides most widely specified shock pulses: MIL-E 5272A (11 ±1 ms half sine) and Ramo-Woolridge (6 ±0.5 ms Saw tooth). 5 tests in 5 minutes at less than 5¢ per test.



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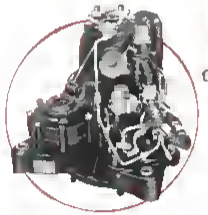
Consolidated Vacuum Corporation

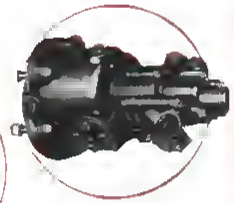
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SUNDSTRAND... New Concepts and Designs in Systems and Components

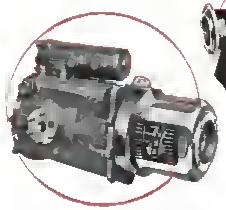
Package-Type Constant Speed Drive

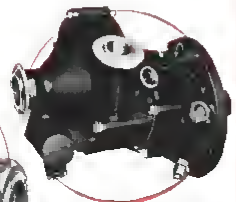




Controlled-Speed Motors

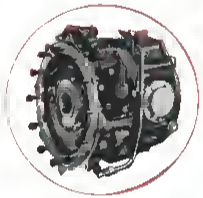
Cartridge-Type Constant Speed Drive





Sundyne Water Injection Pump

Sandwich-Type Constant Speed Drive





Cartridge-Pneumatic Starter

New starter drive combines electric starting and 400-cycle generating system . . . mounts on a single engine pad . . . saves weight and cost . . . simplifies ground support . . . provides electric cross starting from idling engine . . . eliminates power interruption when transferring from external power to aircraft system . . . provides 400-cycle power at low engine speeds.

Combination cartridge-pneumatic jet engine starter starts on cartridge, low-pressure ground cart compressed air, or cross bleed engine air. "Ceecaded" safety features insure fail-safe operation.

Sundyne water injection pump designed for 1500 hours operation between overhauls. Negligible temperature rise during continuous dry operation, high reliability, and long life.

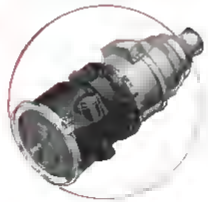
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Controlled-speed motors—variable and fixed displacement types. Variable displacement provides freedom from throttling losses, making them very desirable for many aircraft and missile applications.

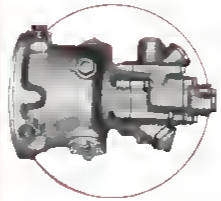
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Constant speed drives 10 to 120 kva. More than 28,000 drives and systems delivered for 39 major aircraft programs have accumulated over 10,000,000 flight hours with exceptional reliability.

Combination Starter Drive



Combination Pump and Motor



High-Temperature Motors



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Permanently protects threads against wear, stripping, corrosion, galling, seizing, vibration, and shock. Made of 18-8 stainless steel wire, this precision-formed *Heli-Coil* Insert has a tensile strength of approximately 200,000 psi. Conforms to military standards and all commercial and industrial thread forms.

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eliminates lock wiring and lock nuts



This one-piece wire Screw-Lock Insert provides all the thread protection of the Screw-Thread Insert, PLUS an exclusive resilient *internal* locking feature that eliminates clumsy protruding lock nuts, lock wiring and other supplementary locking devices. It saves cost, space and weight – permits simple streamlined design in standard bosses. Meets military and N.A.S. specifications for locking torque and vibration.

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for all "on-the-job" thread repairs



Contains everything needed for fast, easy thread repair – *on the spot!* Salvage expensive parts – for pennies! Shop Pack restores threads to original size. Available in U.N.F. and U.N.C. sizes 6-32 to 1½-6. There's a kit for spark plug and pipe thread sizes, too. Each Shop Pack contains a supply of *Heli-Coil* Screw-Thread Inserts with special tap plus inserting tool.

There is a *complete* line of *Heli-Coil* products for every thread need: inserts, taps, tools and gages. Let us help with your design and application problems. Write today for complete information.

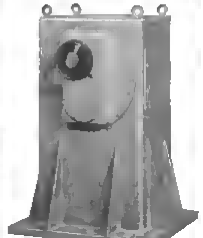
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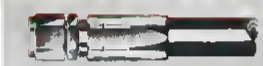


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FOR EVERY AIRCRAFT AND MISSILE



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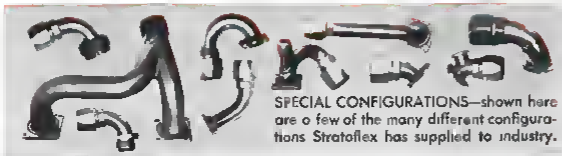


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Hose Assembly
MIL H-8794 Hose

FLEXIBLE FLUID LINE REQUIREMENT



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AN 6270 Hose Assembly
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SPECIAL CONFIGURATIONS—shown here are o few of the many different configurations Stratoflex has supplied to industry.

(Above hose assemblies conform in every detail to specifications listed.)



SF12-0

STRATOFLEX offers complete hose assemblies, hose and fittings in a wide range af sizes and types, allowing engineers exceptionol freedom in equipment design. Stratoflex flexible hase and fittings are available for most fluid applicatians and for a wide range of pressures. Medium pressure Super-T Teflan* and high pressure Super "T-HP" Teflan* are designed for extreme temperoture applications.

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PRECISION
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BEARINGS

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SMITHKALIGN PLAIN SPHERICAL BEARINGS
Have self-contained, two piece outer ring which maintains positive position during installation and when under load.
Have fully hardened ring and ball.
Are precision, spherical ground for perfect fit.
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INDUSTRIAL CAM FOLLOWERS and YOKE TYPE NEEDLE ROLLER BEARINGS—FROM STOCK

HIGH TEMPERATURE and SPECIAL PURPOSE NEEDLE ROLLER BEARINGS
Engineered and developed.
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PRECISION HARDENED and GROUND AIRCRAFT PARTS
Production automatic screw machine, heat-treat and grinding facilities. Send your prints for quotation.

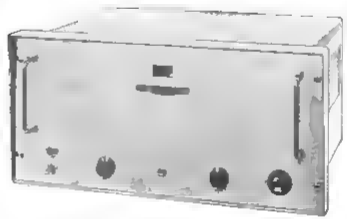
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443 North Avenue, Garwood, New Jersey

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AC ELECTRONIC GENERATOR

MODEL 150
$525.00



PRECISION AC POWER SUPPLY FOR LABORATORY & PRODUCTION USE

SPECIFICATIONS

Power Output	160 V A	Total Distortion	Less than 1%
Fixed Frequency	400 CPS (other frequencies available)	Regulation	Less than 1%
Variable Frequency	350 450 CPS	Operates with load of any power factor	
External Frequency	50-4000 CPS	Small size	8¾" x 19" Panel

Also Available — Model 250 — 250 VA Power Output

Representatives in Principal Cities

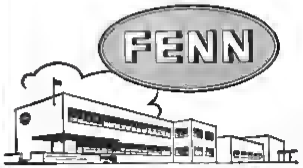
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For many years Fenn has been entrusted to produce vital and complex components in large quantities for aircraft. Today, Fenn has the facilities and personnel experienced in machining of special metals and alloys required in the aircraft, missile, and nuclear fields. Fenn's ultra-modern plant includes the finest metal working machines, heat treating, plating, surface treatment, a metallurgical laboratory, and resident air force inspection. We welcome the opportunity to discuss your requirements. Write for copy of *Fenn Facilities*.



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For transporter erector launcher systems and sub-systems designed and built to meet your specific needs, call on the experience and facilities of Bendix. Unchallenged pioneer status in both the automotive and aircraft industries provides us with unique preparation to supply transport systems for aircraft, missiles or spacecraft.

In addition to complete systems, Bendix-built components for transporter-erector launchers include central hydraulic power supply and control system, heavy duty brakes, power brakes, power steering, hydro pneumatic suspension systems, leveling devices, anti-skid mechanisms, and power actuators.

For assistance in meeting your transporter erector launcher needs, contact Sales Manager, Bendix Support Equipment, Bendix Products Division, South Bend, Ind.

This is BENDIX SUPPORT EQUIPMENT, South Bend, Indiana

TEST EQUIPMENT AND FACILITIES

FLUID HANDLING

TRANSPORTER SYSTEMS

HANDLING, HOISTING, ERECTING, JACKING

SYSTEMS MANAGEMENT

ANOTHER BENDIX FACILITY: Bendix Support Equipment—Teterboro, N. J., specializes in electronic and electro-mechanical equipment, including manual and automatic check-out units, adaption equipment, and training devices and simulators.



Hydraulic Power Steering—engineered performance proved for safe, efficient operation



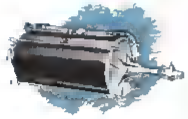
Hydro-pneumatic Suspension Systems—low shock suspension through low rate springing, internal shock absorption



Central Hydraulic Power Supply—pumps, control panels, valves for entire vehicular hydraulic system



Complete Braking Systems—research, engineering, testing and production of entire braking systems



Braking needs Tailored—power brake units for all sizes and types of vehicles.



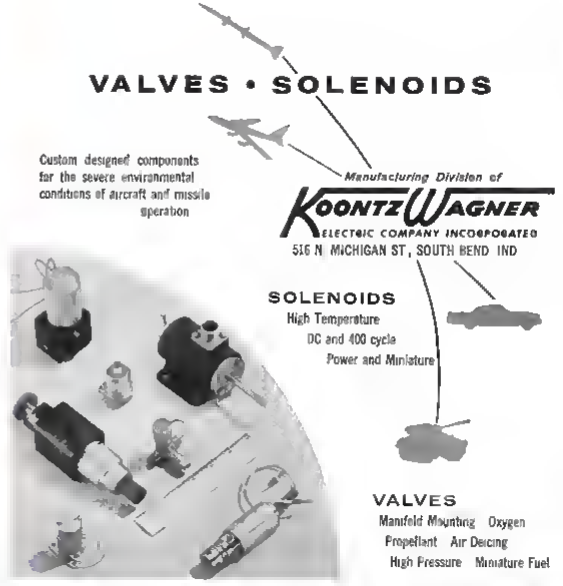
Hydraulic Power Actuators—capable of erecting an environmental container, with missile system, from horizontal to vertical position

BENDIX SUPPORT EQUIPMENT

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See us first and you will probably find the control you are looking for. Save the time and expense of having a special remote control designed, because one of Arens' 44 (and growing all the time) standard designs will probably fulfill your requirements. But if not, our engineering and research department will be pleased to work with you on special controls for your application. Write us your requirements.

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COMPRESSION to 12,000 psi

...discharge capacities to 150 scfm

with CARDAIR CENTRAL RECOMPRESSOR SYSTEMS

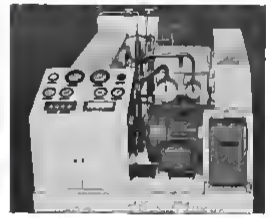


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Cardair Central Compression Systems (completely packaged, semi-portable)—are today handling air and a variety of gases—helium, nitrogen, argon, etc.—at pressures ranging from 4,000 to 12,000 psi with discharge capacities from 50 to 150 scfm. Even hydrogen is being safely compressed to elevated pressures.

Systems can be provided from stock with *guaranteed* purification of delivered gas to −100°F dew point and less than 4 ppm oil content. Specially engineered systems to meet your particular requirements can be supplied from standard components.

This performance is *demonstrated* by exacting rocket and missile service and continuously growing use by prime contractors, suppliers of missile components and controls, and testing laboratories. It is *backed* by over 20 years of compressor design and application experience.



Model PG CCS—*General* wide selection of systems: 4-stage air-cooled Compression System—Pressure Range 4,000–12,000 psig—Induction 40 to 135 psig—Capacity: 75 scfm Ne and Air; 70 scfm He—Guaranteed Gas Purity −100°F. Dew Point, less than 9 ppm oil content.

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Rockwell-Standard is the largest manufacturer of standard military and commercial trailer axles. These include a complete family of axles in a wide range of capacities, both single and tandem.

Rockwell-Standard military and commercial trailer axles are produced in the world's largest, most modern trailer axle plant. Here unmatched production, research, and testing facilities are combined with many years of axle building experience to offer military vehicle manufacturers service that gets results.

Because of the completeness of the Rockwell-Standard line, we are able to adapt our designs to most special applications. We welcome the opportunity to quote on all trailer axle needs.

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Circle Ess Flexible shafts are compact lightweight strong durable They transfer power efficiently and economically regardless of obstructions in the path of installation, while insuring the most accurate alignment For complete flexible shaft specifications send for our Flexible Shaft Bulletin 539

Circle Ess Adaptese are lightweight compact durable and offer a number of varied uses The Dual Drive Adapter pictured here measures only 2 27/32 x 1-61/64" and weighs only 4 oz For complete adapter specifications send for Flexible Shaft Adapters Catalog

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Dual Drive Adapter

RT Angle Ball Bearing Adapter

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MARSH Needle Throttling Valves... because they are guaranteed to give micrometer regulation at HIGH pressures—pressure up to 10,000 psi—and any temperature up to 500° F.

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SPHERCO

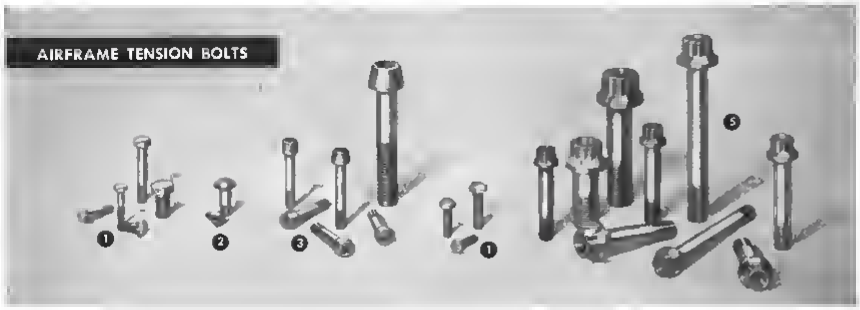
A PRODUCT OF SEALMASTER BEARING DIVISION STEPHENS-ADAMSON MFG. CO.



THREADED FASTENERS

FOR THE AEROSPACE INDUSTRY

AIRCRAFT/MISSILE Division **sps**



Broad selection of AN, NAS and MS Series, plus SPS high strength, high temperature types. Tensile range from 110,000 to 260,000 psi, service temperatures to 1600°F. Materials include aircraft quality alloy and corrosion-resistant steels and many of the new super alloys. Bolts furnished drilled, undrilled or with the Nylok* self locking feature. Plating per your specifications or to meet specialized service conditions. Heads forged to retain continuous grain flow into shank. Threads fully formed by rolling after heat treatment.

*T.M. Reg. U.S. Pat. Off., The Nylok Corporation

1. Hex Head Bolts. Complete line of AN and NAS Series. Tensile strengths from 125,000 to 160,000 psi. Serviceable to 550°F.

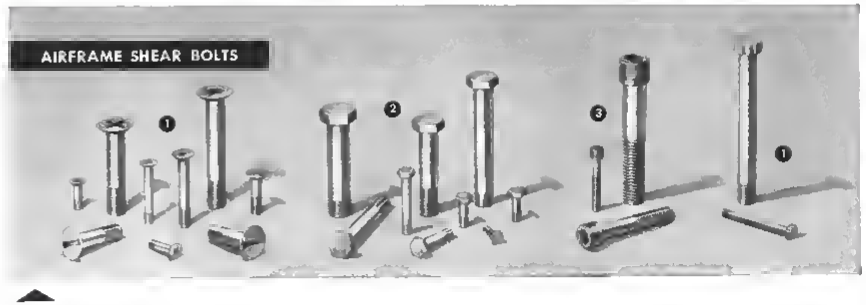
2. Clevis Bolts. AN type. 125,000 psi tensile strength. Serviceable to 550°F.

3. Internal Wrenching Bolts. Complete line of AN, NAS and MS Series. Tensile strengths from 125,000 to 180,000 psi. Serviceable to 550°F.

4. Crown Hex Head Bolts. NAS type. 125,000 psi tensile strength. Serviceable to 550°F.

5. 12-Point External Wrenching Bolts. Extensive line of NAS and MS Series, plus SPS special high-performance types (Hi Psi EWB 22, LWB 22, EWB 26, EWB 1615, EWB Tm 9). Tensile strengths from 180,000 to 260,000 psi. Service temperatures to 1600°F.

SPS HIGH-PERFORMANCE PRECISION FASTENERS FOR THE AEROSPACE INDUSTRY



Shear strengths from 95,000 to 156,000 psi. Temperature range to 900°F. Extensive line of NAS and MS Series, along with SPS high performance types. Variety of wrenching recesses. Furnished in aircraft quality alloy and corrosion resistant steels and—where appropriate—in new super alloys. Wide choice of plating and other finishes. Can be supplied drilled or with Nylok locking pellet in thread. Heads forged, threads fully formed after heat treat.

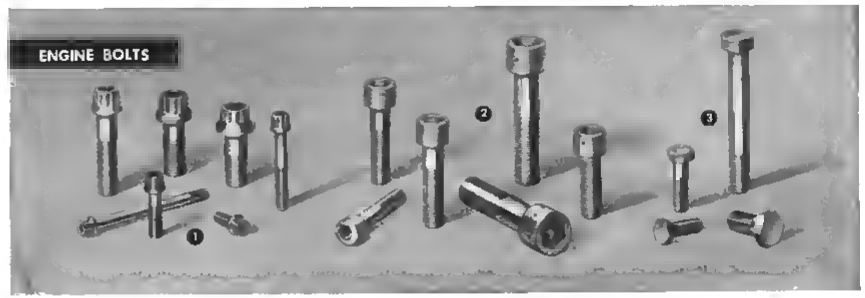
1. 100° Flush Head Bolts. Complete line of NAS Series. Also SPS high strength, high temperature types—SFH and SFT 22, 922, 26 and 926. Internal hex, Phillips, Torq-Set* or HI Torque† wrenching recesses. Shear strengths to 156,000 psi. Service temperatures to 900°F.

2. Hex Head Bolts: Selection of NAS Series in shear strengths to 95,000 psi. Serviceable to 550°F.

3. Socket Head Cap Screws: MS and NAS types with internal hex wrenching socket. 95,000 psi shear strength. Serviceable to 550°F.

4. 12-Point External Wrenching Bolts: SPS high-strength, high temperature types (EWSB 22, 922, 26, 926). Shear strengths from 132,000 to 156,000 psi. Service temperatures to 900°F.

*Pat. No. 2,847,894 †Pat. Nos. 2,477,983; 2,745,120

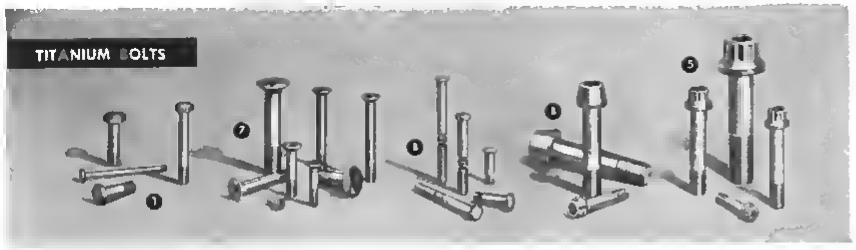


Complete line of AN, MS and SPS types—undrilled, drilled or with Nylok self-locking feature. Tensiles from 110,000 to 260,000 psi. Temperatures to 1600°F. Furnished in aircraft quality alloy and corrosion resistant steels and in new super alloys, plated or otherwise finished to meet application needs. Heads forged to retain continuous grain flow. Threads fully formed by rolling after heat treatment. High performance bolts have SPS HI R thread form with increased root radius for greater fatigue resistance.

1. 12-Point External Wrenching Bolts: Extensive line of MS Series, plus SPS special high-strength, high-temperature types (BE 1615, Hi Tm 9). Tensile strengths from 125,000 to 260,000 psi. Service temperatures to 1600°F.

2. Internal Wrenching Bolts: AN type with internal hex wrenching socket. 140,000 psi tensile strength. Serviceable to 550°F.

3. Hex Head Bolts: Complete line of AN and MS Series. Tensile strengths from 110,000 to 125,000 psi. Service temperatures to 1200°F.



Selection of NAS AN MS and SPS types offering shear strengths to 95,000 psi tensile strengths to 160 000 psi Available drilled undrilled or with the Nylok self-locking element Titanium aircraft bolts, first developed by SPS weigh 43% less than their alloy steel counterparts. Yet in tensile strength to weight, they outperform steel SPS Hi Ti titanium bolts are forged to retain continuous grain flow at the critical head shank juncture Fillets under the head are cold worked for increased fatigue life Threads—fully formed by rolling after heat treatment—have a wider root radius to minimize stress concentrations

1. Hex Head Bolts: NAS and AN Series Shear strengths to 95,000 psi

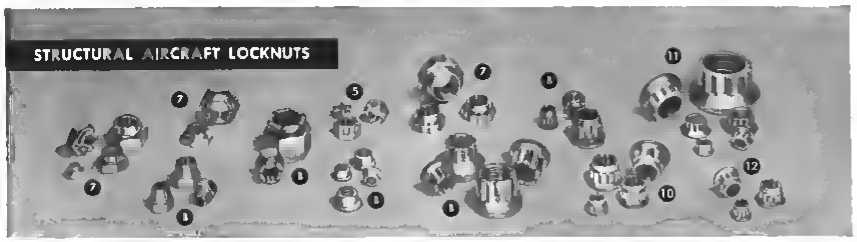
2. 100° Flush Head Bolts NAS and AN Series Phillips, Torq-Set or Hi-Torque wrenching recesses Shear strengths to 95 000 psi

3. Hi Ti Lockbolts*: Complete line of shear and tension types, pull or stump protruding or 100° flush head Shear strengths to 95 000 psi tensile strengths to 150 000 psi

4. Internal Wrenching Bolts: MS type 150 000 psi tensile strength

5. 12-Point External Wrenching Bolts: NAS 624 type 160,000 psi tensile strength

*Manufactured by SPS under Huck Pat. Nos. 2,527,201; 2,631,048; 2,531,049; 2,754,703



SPS locknuts assure high performance minimum weight joints when used with companion SPS bolts Cadmium plated carbon and alloy steel nickel or nickel-cadmium plated AMS 6304 silver plated austenitic stainless steels and silver plated A 286 (SPS M-118) alloy Complete range of standard sizes

1. FLEXLOC Full-Height Locknuts: 22 FSD Series for tension applications to 125 000 psi temperatures to 550°F For AN 3 type bolts (Meet MS 20365 AN 363 AN 365, NAS 1021)

2 FLEXLOC Thin Nuts: 22 FT Series Primarily for shear applications on bolts with shear strengths to 95 000 psi 550°F max (Meet MS 20364, AN 364 NAS 1022)

3. High-Beam PLEXLOCS* 990 F12 990 FR12 Series for temperatures to 1200°F For MS 9033 type tension bolts to 125 000 psi

4 High-Temperature PLEXLOC Locknuts: 99 F12, 99 FR12 Series for service to 1200°F For bolts such as MS 9033 having a minimum tensile of 125 000 psi (Meet MS 20500)

5. Lightweight Hex Locknuts: 22 FZ Series for tension bolts to 125 000 psi and shear bolts with 95,000 psi shear strength 550°F max. For AN 3 and other bolts (Meet NAS 679)

6. Featherweight Hex Locknuts FN 12 Series meet requirements of NAS 1291 and MS 21042 FN 812 Series meet requirements of NAS 1291C Serviceable to 550°F and 800°F respectively Used on wide variety of aircraft bolts

7. 12-Point High-Strength Shear Locknuts. EWSN 22, EWSN 922 Series Primarily for shear applications on bolts with shear strengths to 132 000 psi Also EWSN 26 EWSN 926 Series for shear bolts of 156 000 psi shear strength Serviceable to 550°F and 900°F respectively

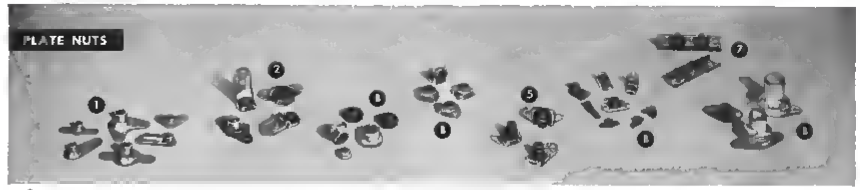
8 12-Point Locknuts: 42 FW EWN 22 Series offering tensile strengths of 180,000 and 220 000 psi respectively 550°F max Also EWN Tm 9 Series for tension bolts of 220 000 psi 900°F max

9 12-Point Locknuts 119 FW Series for temperatures to 1200°F Minimum tensile strength of 125 000 psi For MS 9033 and other bolt series

10. Lightweight 12-Point Locknuts: 42 FLW Series for tension bolts (MS 20004 NAS 624) to 180 000 psi 550°F max.

11. Featherweight 12-Point High-Strength Locknuts. FN 22 Series for tension bolts of 220 000 psi 550°F max

12. Featherweight 12-Point High-Temperature Locknuts* FN 920 Series for temperatures to 900°F Tensile strength of 200 000 psi Also FN 1216 Series for temperatures to 1200°F For tension bolts to 160 000 psi



Nut! Shell lightweight self locking type conforming to NAS 679 through NAS 1068 where applicable Threaded elements furnished in alloy steel cadmium plated or corrosion resistant steel silver plated (also in other finishes) Designed to meet AN-N-10 and/or MIL-N 25027 (ASG) Alloy steel nuts serviceable to 550°F; corrosion resistant nuts to 900°F In floating type nuts (Timesavers) threaded element is readily removable reusable

1 Fixed Anchor Nuts One-lug 2 lug end corner types in flush and 100° counter sunk styles **2 Floating Anchor Nuts** One lug 2 lug corner end right angle types **3 Hex Nuts** Internal external wrenching and forged featherweight types **4 Floating Clinch Nuts** Alloy steel only **5 Floating Spacer Anchor Nuts** One-lug 2-lug and corner types **6 Miniature Fixed and Floating Anchor Nuts** One lug 2 lug corner end right angle types **7 Gang Channel Nuts** Plain self aligning and dome types **8. Self-Sealing Floating Dome Nuts** Two-lug and corner types also 2 lug miniatures **9** UNA N base synthetic rubber or silicone rubber seal



Besides producing complete lines of airframe bolts engine bolts structural nuts and plate nuts SPS is continuously developing new types of fasteners to meet the many specialized demands of present day aircraft/missile design Representative of these special purpose fasteners are

1 Self-Locking Coupling Nuts: One-piece all metal self locking type for fuel hydraulic and oil lines Style CN 8 in alloy steel cadmium plated for service to 550°F CN 8C in corrosion resistant steel silver plated for service to 800°F Interchangeable with existing AN and MS coupling **2. SwageNuts** Simple economical mechanical permanent bearing threads in sheet metal—without special tools Carbon steel cadmium plated 160 000 psi tensile strength Serviceable to 550°F. **3 Sleev-Lock Blind Fasteners:** 100° flush head or hex head styles in aircraft alloy steel heat resistent stainless steel or titanium Can be removed without drilling and reused Sheer strengths from 95 000 psi up

4 Preload Indicating Washers: More accurate than torque wrenches, because friction between mating threads is not a factor Correct preload indicated when compressible inner ring is plastically deformed to same thickness as thin outer ring **5 Speedy-Bolt Assembly** New shear fastener for airframe panels Quickly and easily installed from one side Protruding or flush head styles **6 Structural Panel Fasteners:** Standard and self sealing types in 2 lug and corner floating receptacle styles Available in alloy steel for service to 550°F In corrosion resistant steel for service to 700°F No special tools required **7 Pressure Plugs** New Level Seal design permits flush installation Plugs seal without compound Available in heat treated alloy steel zinc or cadmium plated anodized aluminum alloy and magnesium (Specification MIL F 5509) **8 Spring Pins** Furnished in corrosion resistant and carbon steel zinc or cadmium plated or phosphate coated Also in beryllium copper (Specifications MS 9047 and 9048 MS 171401 through 171999)



SPS offers a virtually unlimited service in special design threaded fasteners for aircraft and missile applications Currently it is supplying such parts for high performance turboprop turbojet and rocket engines; super and hypersonic airframes missile guidance systems and nuclear aircraft engine development projects These custom fasteners can be furnished in a wide range of materials including aircraft quality alloy and corrosion resistant steels titanium and other exotic metals including molybdenum, columbium and beryllium Whatever your requirements in specials SPS has the engineering capabilities and production facilities to meet them



Special lock and stop nuts are also an important part of SPS aircraft/missile fastener production Included are square nuts conical seating nuts shank nuts, barrel nuts, closed-end clinch nuts and many other types—in a complete range of materials. A selection of these nuts is shown here as an indication of the numerous variations SPS can supply to meet special needs.

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S.S.WHITE FLEXIBLE SHAFTS AND ACCESSORIES FOR AIRCRAFT

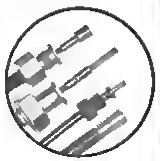
S S White Flexible Shafts and Accessories for aircraft have been developed in close collaboration with aircraft industry tested proved in use They are the ideal solution to critical weight, space and performance problems in military, commercial and private planes

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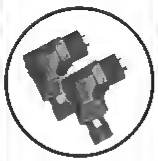


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- Where space limitations prevent a direct connection, S.S.White Angle Adapters make it easy to attach flexible shafts to parts.
- Available in 90°, 135° and straight styles for remote control or power-drive applications

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PRESSURE BULKHEAD FITTINGS

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- Low operating torque, lightweight, maintain excellent pressure tightness

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MECHANICAL SCREW JACKS

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- Provide safe operating axial load of 390 lbs
- Precision made, lightweight, minimum end shake

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- Two lines to choose from — THE QUALITY LINE of Rigid Acetate (tough, rigid, impervious to petroleum-base oils and greases), and THE ECONOMY LINE Elastoplastic Vinylite (same advantages at lower cost) WILL NOT SHRED, GIVE FULL PROTECTION!
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1141

Example . . .



. . . of B & P capability to make lightweight metal assemblies for electronic equipment

Designing and manufacturing products and assemblies of light metals is a highly specialized field Techniques unknown to production in other metals must be understood and new ones must be developed for unusual requirements

Because it has concentrated on light metal manufacturing for many years, Brooks and Perkins today has experience and capability unmatched by any other organization

The Nike-Hercules system magnesium cabinet shown above is just one example of B & P skill in maintaining close tolerances and optimum precision Other products and assemblies designed and produced by B & P include

- **cooler plates • radar reflectors**
- **communication equipment covers**
- **radar reflector bases • equipment housings • tripods • radar plotting equipment • shelters**
- **transit cases • gun fire control housings and turrets**

When you need lightweight products or assemblies for electronic equipment, take advantage of B & P's experience and capability

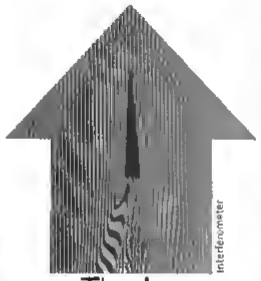


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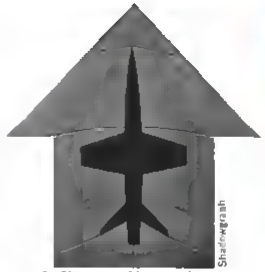
61 T 2



Tinsley



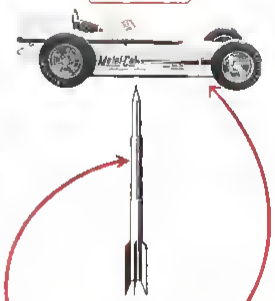
Air Flow



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Metal-Cal

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DECORATION

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Whether for Information Identification Specifications or Decoration, you can do the job better with Metal-Cals

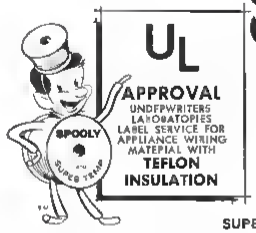
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PRODUCTS	PRIMARY INSULATION: MATERIAL	COLOR PER MIL STD 104: Solid	COLOR PER MIL STD 104: Striped	PRIMARY INSULATION: OPERATING TEMPERATURE	JACKET INSULATION: TFE TEFLON TAPE WRAP −90°+250°	FEP TEFLON EXT −90°+200°	FIBRE GLASS BRAID IMPREG −90°+260°	PVC EXT. −55°+105°	NYLON EXT. −40°+100°	NYLON BRAID AND LACQUER −55°+125°	DACRON BRAID −55°+100°	POLY ETHYLENE EXT −55°+90°	REMARKS
CARLES Single & Multiconductor	TFE Teflon Ext. or Tape	✓	✓	−90°+260°	✓	✓	✓	✓	✓	✓	✓	✓	Any combinations of conductors and shielding available.
	FEP Teflon Extruded	✓	✓	−90°+200°		✓	✓	✓	✓	✓	✓	✓	Conductors and primary insulations per Mil W 16878. Special conductors and wall thicknesses of insulations available.
	Silicone Rubber	✓		−55°+200°		✓	✓	✓	✓	✓	✓	✓	Bonding treatment of teflon primary or jacket insulations available
	PVC	✓	✓	−55°+105°				✓	✓	✓	✓		Shielded with Silver Plated or Tinned Copper.
COAXIAL CARLES	TFE Teflon Extruded	✓		−90°+260°	✓*	✓	✓*	✓	✓	✓	✓	✓	* Per Mil-C 17B
	FEP Teflon Extruded	✓		−90°+200°		✓	✓	✓	✓	✓	✓	✓	Special constructions and jackets available.
	Polyethylene Solid or Foam	✓		−55°+80°			✓	✓*	✓	✓	✓	✓*	Shielded with Silver Plated or Bare Copper
AIRFRAME WIRES	TFE Teflon Tape and Imp. Glass	✓		−60°+205°		✓	✓			✓	✓		Per Mil W-7139A Shields and jackets available
	Silicone Rubber and Dacron	✓		−55°+150°			✓			✓	✓		Per Mil W-8777A Shields and jackets available
HOOK UP WIRES	TFE Teflon Ext. or Tape	✓	✓	−90°+280°	Per Mil W 16878 type E or EE—in thin wall or extra heavy wall								UL APPROVED
	FEP Teflon Ext. or Tape	✓	✓	−90°+200°	Produced to physical dimensions of Mil W 16878 type E or EE								Special constructions available.
	Silicone Rubber	✓		−60°+200°	Per Mil W 16878 type F or FF special constructions								Twisting of two or more wires available
	PVC	✓	✓	−55°+105°	Per Mil W 16878 type B C, or D with or without Nylon Jacket								Bonding treatment of Teflon insulations available.
	TFE Teflon Film	✓		−90°+260°	Operating voltage 300 RMS—Solid conductors only								
MAGNET WIRES	TFE Teflon Film	✓		−60°+260°	Per Mil W 19583 type III single heavy triple and quad wall thickness								Tempering and bonding treatments available
	Silicone and Isonel	Natural		−55°+155°	Per Mil W-19583 type II single and heavy wall thickness								
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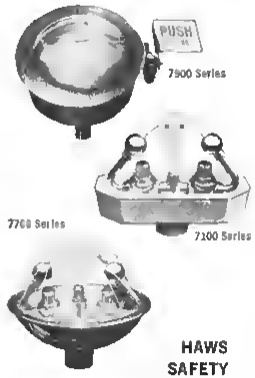
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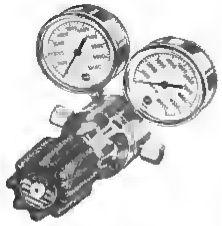
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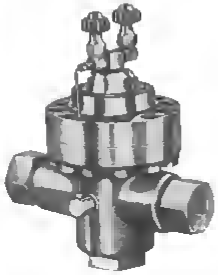
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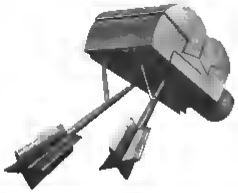
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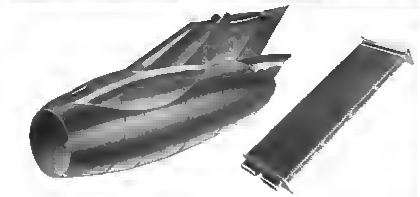


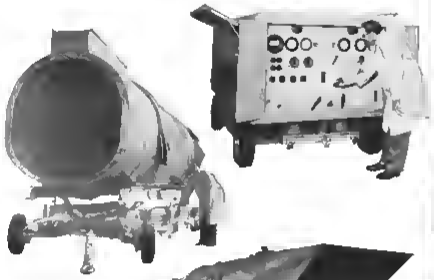
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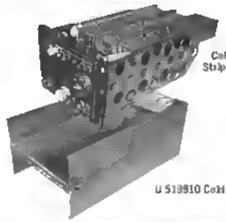
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Cold Plate with IF Strips Installed

U 519910 Cold Plate

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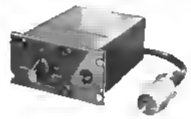
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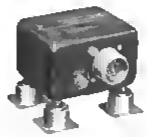
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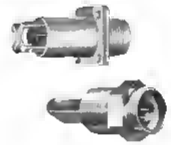
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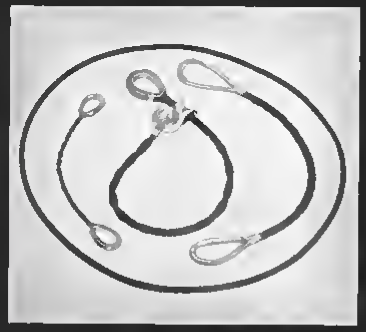
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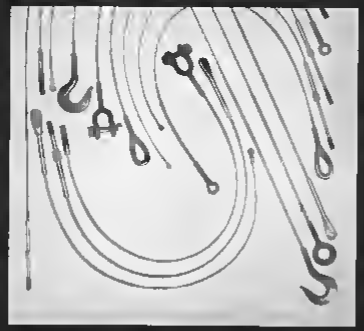
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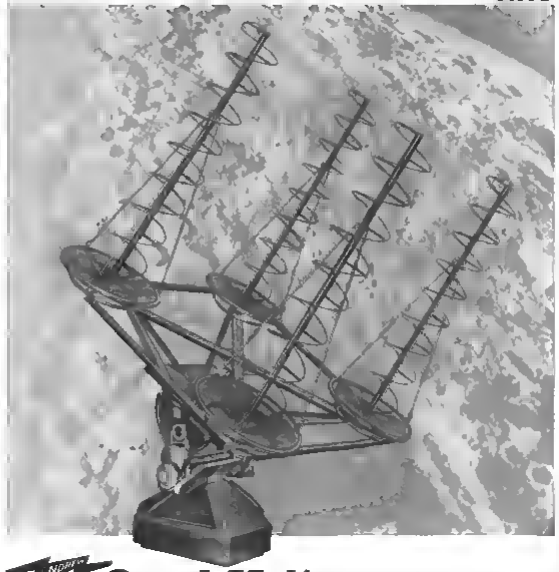
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890-990 MC 17.5 DB GAIN TYPE B106B

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215-265 mc	10.5 db	H 50140 A
215-265 mc	13 db	H 19110 A-2
260-320 mc	13 db	H 19110 A-3
320-400 mc	13 db	H 19110 A-4
400-500 mc	12 db	H 19110 A-5



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FREQUENCY	TYPE NUMBER
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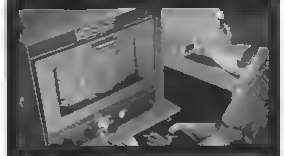
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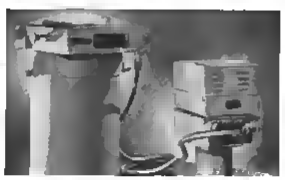
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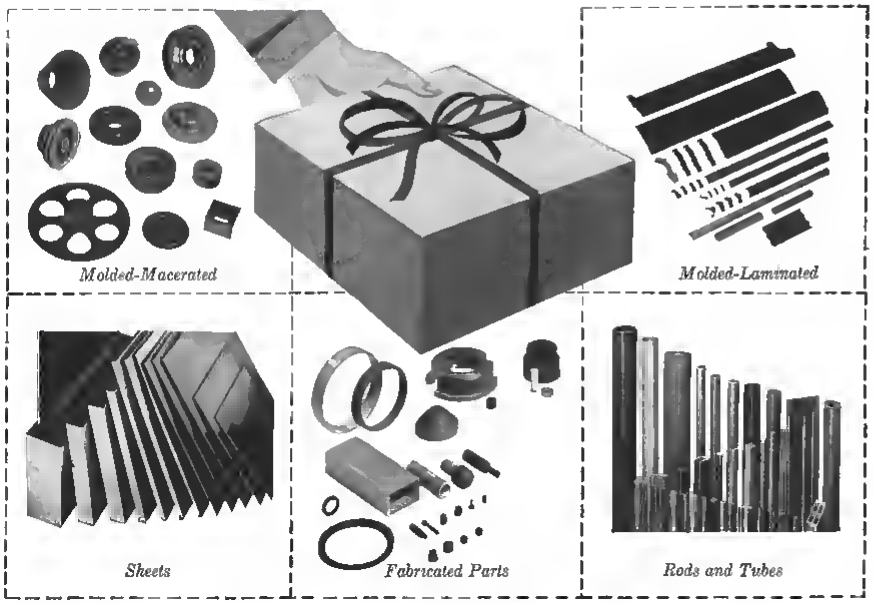
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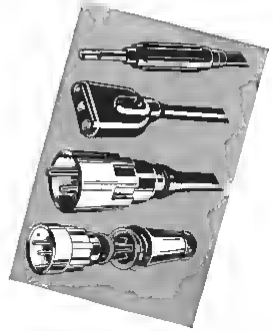


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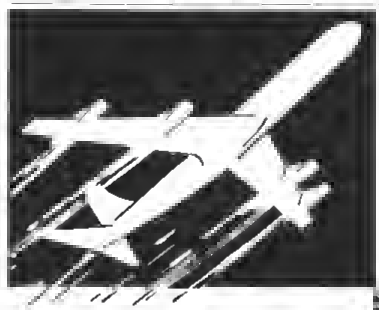
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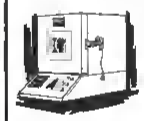
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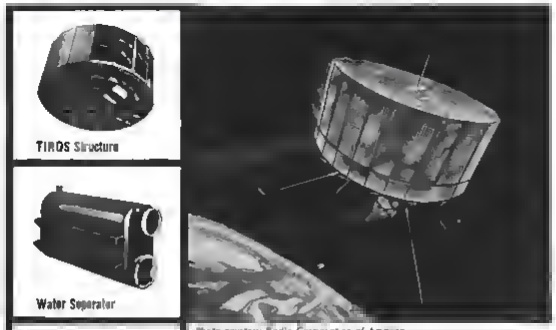


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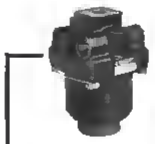
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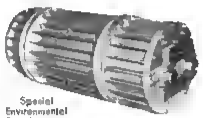


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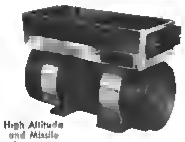


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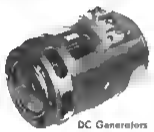


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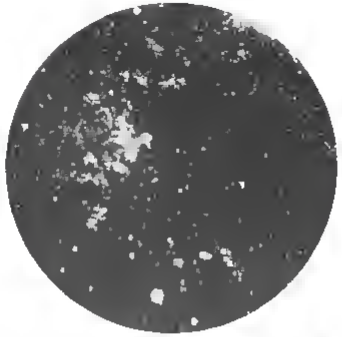
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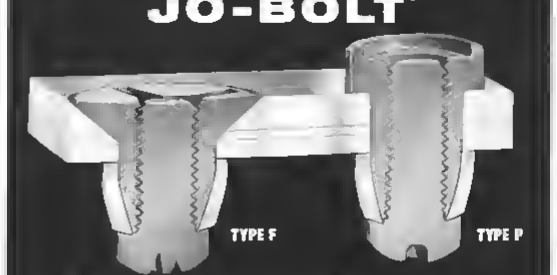
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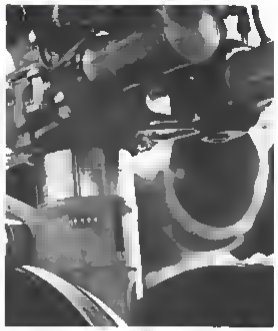


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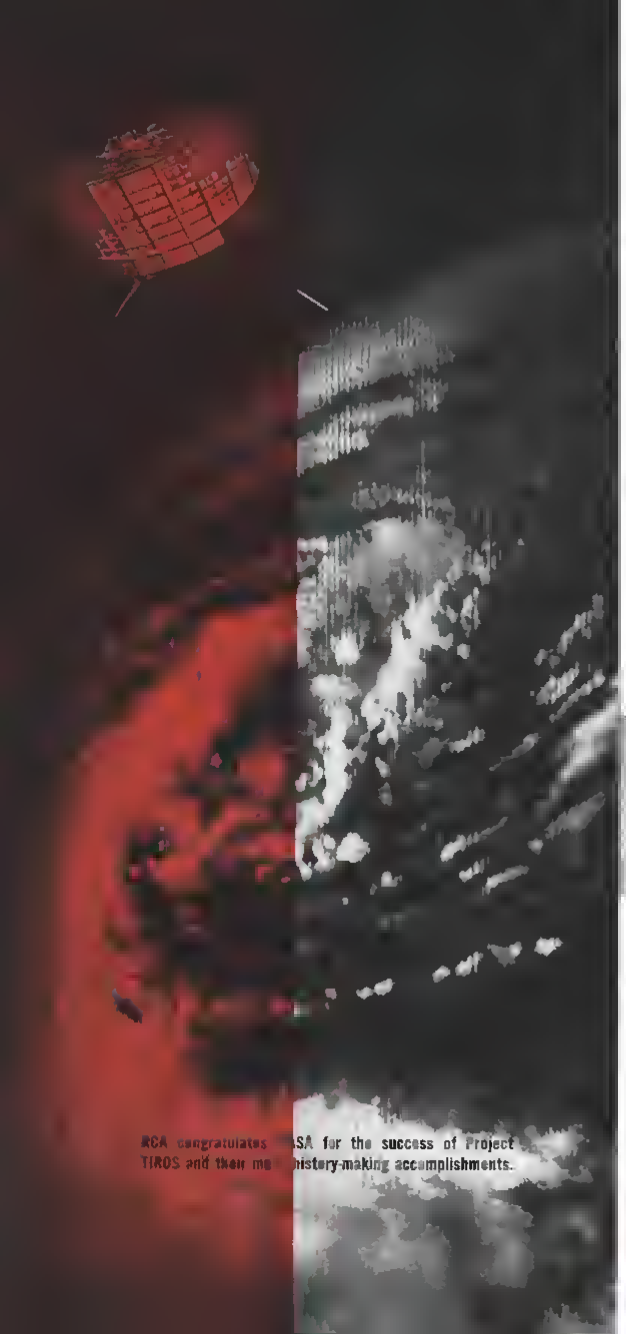
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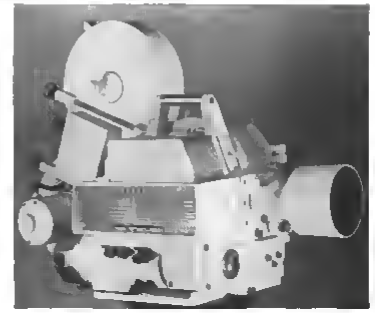
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WF-47—400 Motion Picture

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WF-666—600' Combined Motion Picture-Oscillo-Streak

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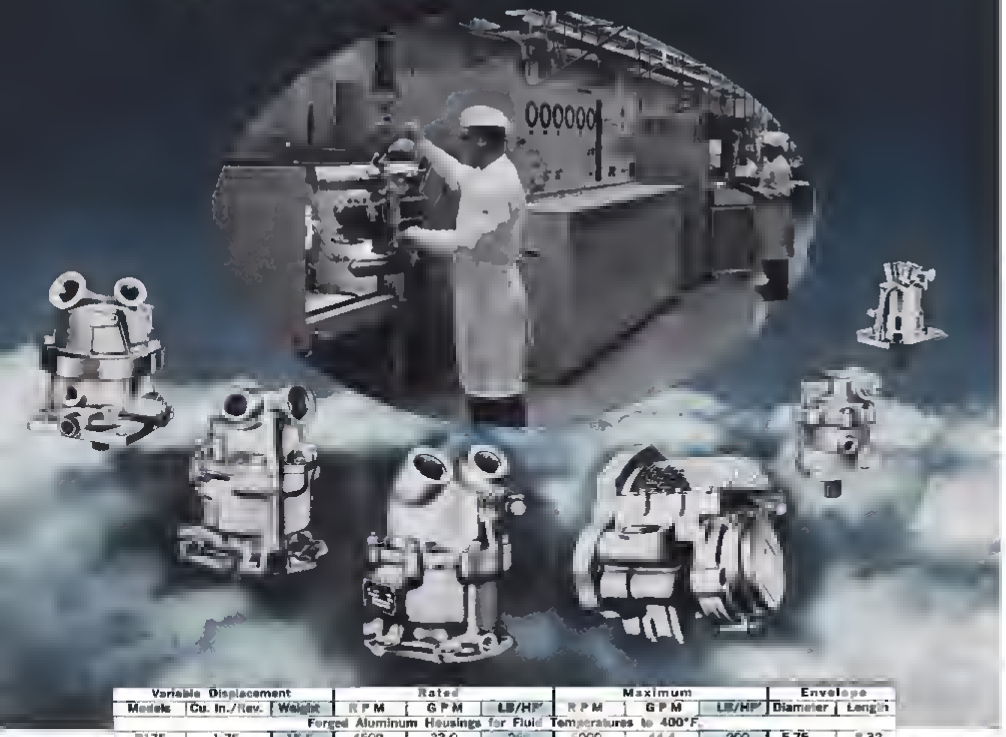
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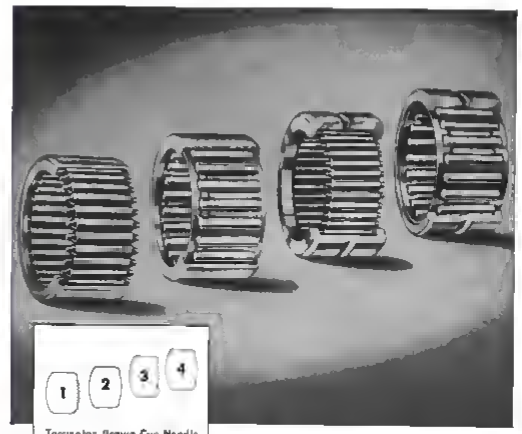
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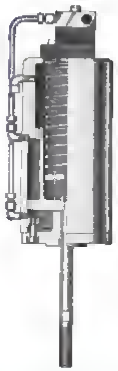
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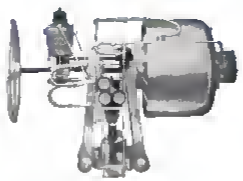
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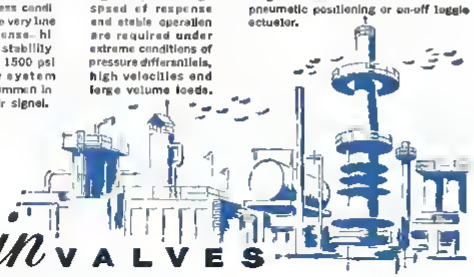
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Section **E**



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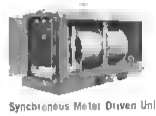
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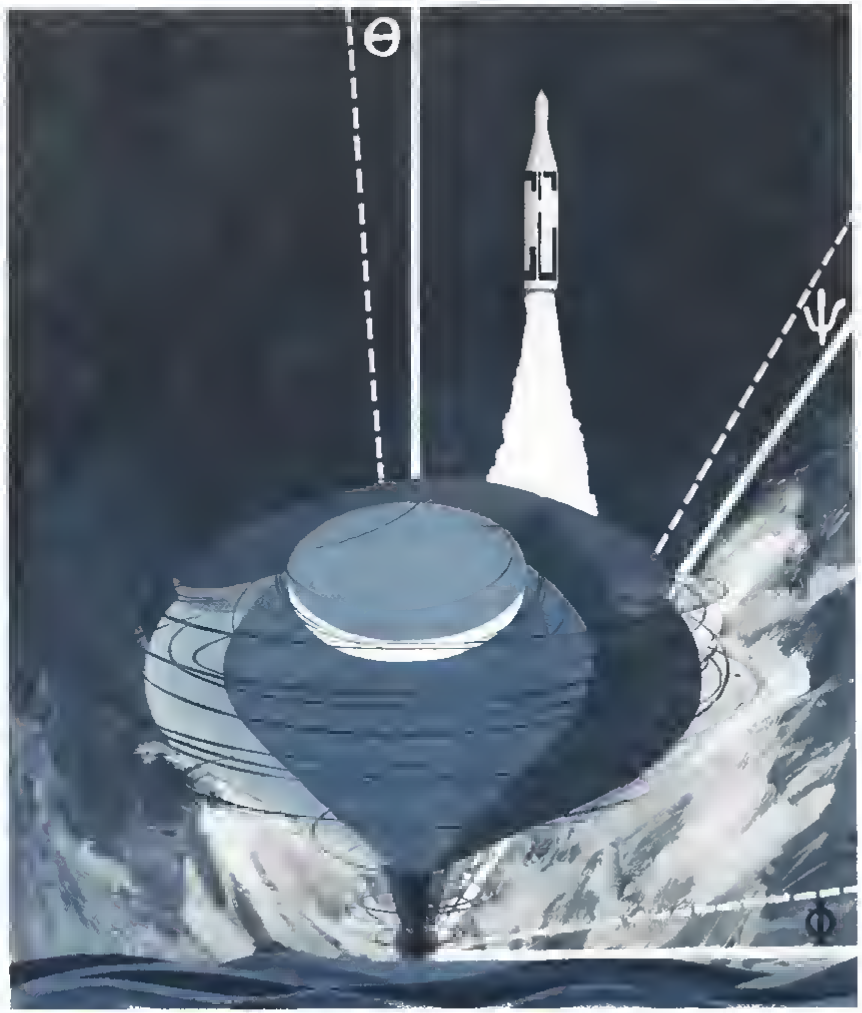

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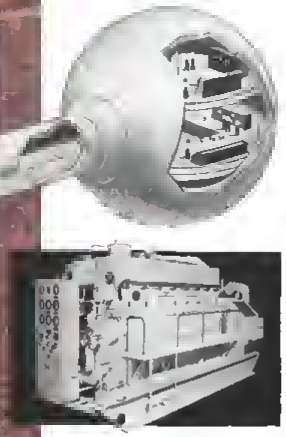
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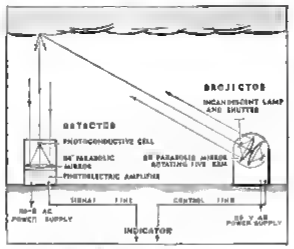
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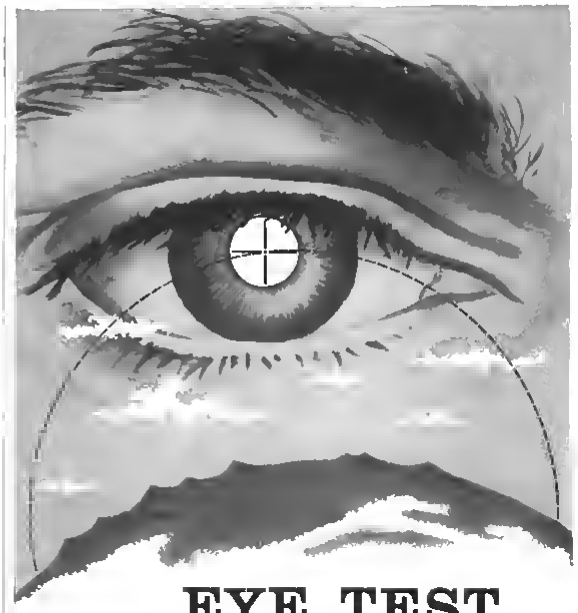
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1961 AVIATION WEEK and Space Technology BUYERS' GUIDE

Classification of products offered by "DISTRIBUTOR" advertisers in this issue

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1—Accessories, Aircraft
2—Baltic Alloy (Grade 8) others
3—Brushes, Carbon
4—Cables, Assemblies, Swaging, Terminals
5—Capacitors
6—Condensers, Mica, etc.
7—Connectors AN, Coaxial
8—Engines, Parts
9—Equipment Aircraft, Ground, Electrical Electronic Test
10—Fasteners, AN, MS NAS
11—Fiberglas Cloth Tape Mat Woven Roving Milled Glass, Chopped Strands
12—Fittings
13—Generators
14—Gyros Altitude Direction, Horizon
15—Hand Tachometers
16—Hardware Supplies
17—Inspection Equipment Optical, Mechanical
18—Instruments Engine Flight, Precision Test Measuring and Precision
19—Inverters Inverter Parts
20—Meters, Test and Panel
21—Meters, Servo Synchro, etc.
22—Nuts Alloy (Grade 8) others
23—Plastic Sheets Rods Tubes Films
24—Potentiometers
25—Rectifiers Silicon, etc
26—Relays Timers
27—Resin Plastics, Polyester Epoxy
28—Resistors
29—Rings Moulded Rubber "O", Backup
30—Rivets Tubular
31—Screws Miniature
32—Speed Indicators
33—Switches
34—Terminals Boards, Hardware
35—Transistors
36—Tubes, Electronic
37—Tubing Steel
38—Valves, Check
39—Washers Special
40—Wire

The numbers after the advertiser's name, indicate the products offered by the advertiser

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ALMAC PLASTICS, INC.	350	11 23 27
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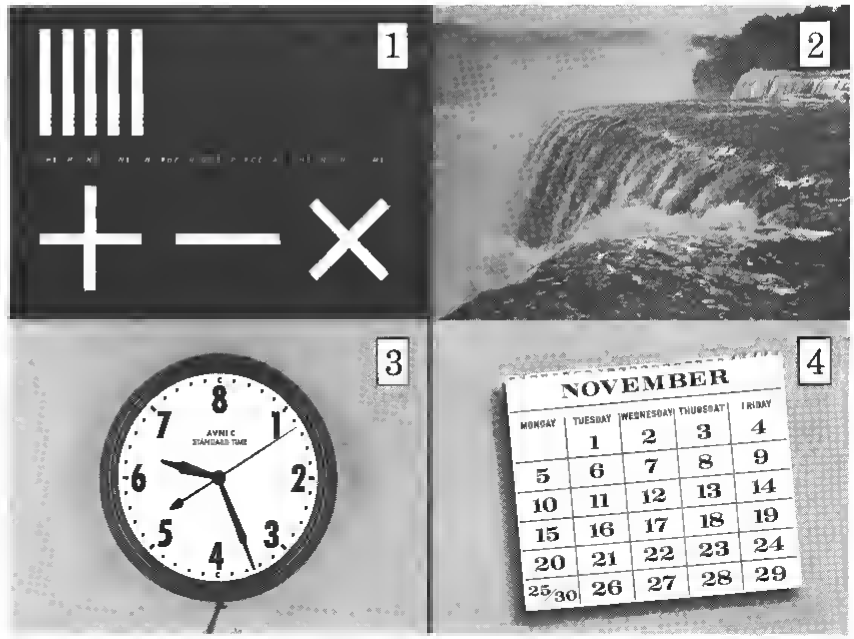
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1 A NEW CONCEPT OF PLACING the Right Love—at the Right Place—at the Right Time. The Avnet System supplies not only the components themselves but a wealth of application information, saving the user hours of costly research time.

2 A NEW CONCEPT OF SUPPLY—an available supply that is overwhelming in its size. Avnet's supply of electronic components is vast—in breadth and in depth. It is also carefully anticipated to meet your demands of tomorrow, next month, next season.

3 A NEW CONCEPT OF TIME. Avnet ships your orders about ½ faster than any other major source of supply, hence ½ of the hours can be cut from your waiting time. Although the 8 hour clock is symbolic, it is symbolic of a fact.

4 A NEW CONCEPT OF SCHEDULING. Once your order is given to Avnet, it knows no "weak-ends." Within a given period, Avnet ships more orders than any other source for electronic components, giving your specific order quicker delivery, faster use.



5 THE CONCEPT OF NEW CHALLENGE. Avnet doesn't know what the next decade will bring. But Avnet is very ready, willing and able to meet the challenge with *more* improvement in service, *more* newness, *more* changes for the better. For this is the very heart of The Avnet System.

AVNET

THE AVNET SYSTEM
Men / Methods / Materials / Management
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SEARCHLIGHT ADVERTISERS INDEX
1961 AVIATION WEEK and Space Technology BUYERS' GUIDE

Classification of products and services offered by "SEARCHLIGHT" advertisers in this issue

PRODUCTS

1—Accessories Aircraft
2—Aids Training
3—Air Compressors, Lifts Jacks
4—Aircraft Executive Personal
5—Antennas & Radiating Equipment
6—Bearings
7—Brushes Carbon
8—Cables Assemblies, Swaging Terminals
9—Capacitors
10—Carburetors
11—Chargers Battery
12—Components Jet
13—Condensers Mica etc
14—Connectors AN Coaxial
15—Contactors
16—Engines Parts
17—Equipment Aircraft Ground
18—Fiberglas Cloth Tape Mat Woven Roving Milled Glass Chopped Strands
19—Fittings and Clamps
20—Forgings Bar Stock
21—Generators
22—Gyros Attitude Directional Horizon
23—Handbooks Manuals Technical Publications
24—Hardware Supplies
25—Hydraulic Lifts Jacks Devices
26—Ignition Parts
27—Instruments Engine Flight Pressure Test
28—Inverters Inverter Ports
29—Lamps
30—Lights Assemblies Cockpit
31—Machine Spec and Print
32—Machine Tools Used and Rebuilt
33—Materials
34—Meters Test Panel
35—Motors Servo Synchro etc
36—Parts Magneto
37—Plastics Sheets Rods Tubes Films
38—Potentiometers
39—Radar Test Equipment
40—Radio Aircraft
41—Receivers
42—Rectifiers Silicon etc
43—Relays Timers
44—Resins Plastic Polyester Epoxy
45—Retainers
46—Rings Moulded Rubber "O" Backup
47—Seat Assemblies
48—Solenoids
49—Superchargers
50—Switches
51—Tapes Adhesives Asbestos
52—Terminals, Boards Hardware
53—Tires
54—Transistors
55—Transmitters
56—Tubes Electronic
57—Valves, Check
58—Wire

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59—Aircraft
60—Aircraft Brakers
61—Air Compressors, Lifts Jacks
62—Airframes
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64—Charges Battery Repairs Replacements
65—Charter, Air Cargo
66—Engine Build-Up Changes Inspections Repairs Starter
67—Equipment Installations Repairs
68—Executive Aircraft Lease
69—Financing Aviation
70—Flight Safety Equipment
71—Flight Test Support
72—Hydraulic Lifts, Jacks Devices
73—Inspections Aircraft Engine Equipment Instruments
74—Instruments Installation Repair Testing
75—Insurance Aviation
76—Interior Design Modification
77—Jacks Aircraft
78—Janitor Installations
79—Leasing Aircraft
80—Machine Shop Work
81—Maintenance Aircraft Engine
82—Overhaul Services
83—Plexiglas Window Installation
84—Plating
85—Propeller
86—Radar X and C Bands
87—Radio Electronics Installation Repair Testing
88—Recalk Aircraft Airframe Engine Equipment
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90—Sealing Specialties
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92—Survival Equipment

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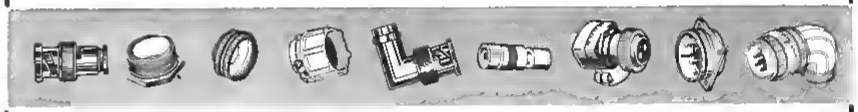
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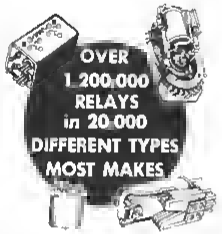
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WHAT HAPPENS WHEN A NATION SPENDS MORE ON GAMBLING THAN IT SPENDS FOR HIGHER EDUCATION?

If you can find any Romans around, ask them. They lived pretty high on the hog in their day. That is, until some serious-minded neighbors from up North moved in. The rest is ancient history.

You'd think their fate would have taught us a lesson.

Yet today we Americans spend twenty billion dollars a year for legalized gambling, while we spend a niggardly four-and-a-half billion for higher education. Think of it! Over four times as much! We also spend six-and-a-half billion dollars a year for tobacco, nine billion dollars for alcoholic beverages and billions more on other non-essentials.

Can't we read the handwriting on the wall?

Our very survival depends on the ability of our colleges and universities to continue to turn out thinking men and women. Yet today many of these fine institutions are hard put to make ends meet. Faculty salaries, generally, are so low that qualified teachers are leaving the campus in alarming numbers for better-paying jobs elsewhere.

In the face of this frightening trend, experts estimate that by 1970 college applications will have doubled.

If we are to keep our place among the leading nations of the world, we must do something about this grim situation before it is too late. The tuition usually paid by a college student covers less than half the actual cost of his education. The balance must somehow be made up by the institution. To meet this deficit even the most heavily endowed colleges and universities have to depend upon the generosity of alumni and public spirited citizens. In other words, they depend upon *you*.

For the sake of our country and our children, won't you do your part? Support the college of your choice *today*. Help it to prepare to meet the challenge of tomorrow. The rewards will be greater than you think.

It's important for you to know what the impending college crisis means to you. Write for a free booklet to HIGHER EDUCATION, Box 36, Times Square Station, New York 36, New York.

ADVERTISING COUNCIL PUBLIC SERVICE

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HIGHER EDUCATION KEEP IT BRIGHT

1960-61 AVIATION WEEK BUYERS' GUIDE

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99.99+% RELIABILITY • FAST ACTING
DUAL PRIMERS
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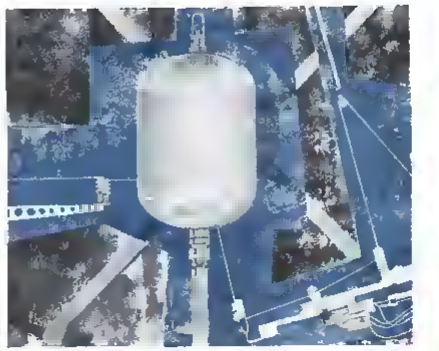
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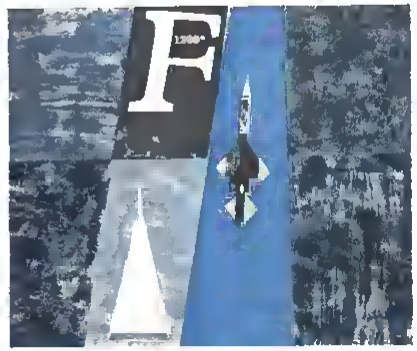
In foreground are the two parts, Con O Cap Firing and Trigger Assembly, that make up replacement kits. In background is a Conax Con O Cap Explosive Valve with anodized aluminum finish.

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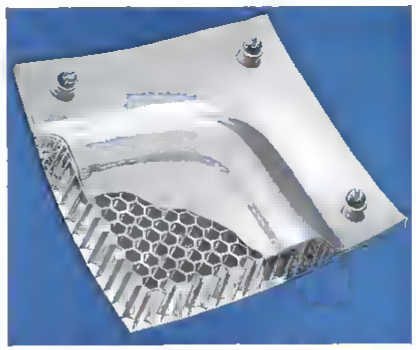
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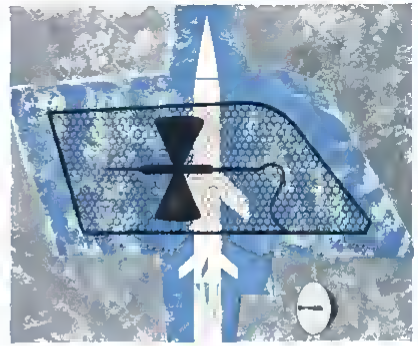
ROCKET MOTOR CASE. Brunswick's exclusive bi axial Strickland B" Process of fiber glass filament winding gives S-D ratio to 2,000,000, provides up to 7,500,000 psi modulus. By laying down filaments under tension SBP excels in making cylindrical shapes, unusual contours, large range of sizes. Pre-stressing gives exactly controlled uniformity.



RADOMES. Brunswick's non-metallic materials boost heat tolerance of radomes and nose cones to 1000-1200°F for limited exposures. SBP filament winding gives highest-ever strength-to-weight ratios with significant weight savings over usual structures. With unmatched electrical uniformity, Brunswick builds to tightest tolerance for dielectric constants and compound configurations.



HONEYCOMB ASSEMBLIES now developed by Brunswick can support two million times their own weight. Brunswick research has created honeycomb assemblies of paper, fiber glass, aluminum and various combinations of these materials. Using the most advanced adhesive systems, these assemblies can be formed in compound curvatures with extremely close tolerances.

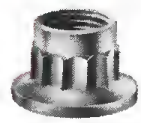


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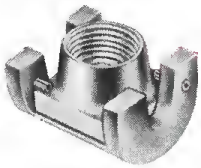
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FATIGUE LIFE OF ANY HIGH TENSILE BOLT DOUBLED
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Photoelastic comparison of stress distribution patterns between standard self-locking nut and modified Elastic Stop nut using the Equa-stress thread form applied to a standard UNF-3 thread. Visual analysis reveals that the load is heavily concentrated on the lower three threads of the standard nut; in the Double Durability nut the load is re-distributed over all of the six threads below the locking device. Send for DESIGN MANUAL 5930 for additional photoelastic studies and illustrative drawings of stress distribution in fasteners.

*ESNA's new Double Durability nut is a major breakthrough in the fatigue life control of threaded fasteners. It can multiply the fatigue endurance of the average bolt from 2 to *30 times* depending on the level of stress.

The Equa-stress thread design is the secret. In a standard nut the major portion of the load is carried by the first two or three bolt and nut threads next to the bearing face. The unique new design re-distributes the load more evenly over all the threads . . . without essentially altering the dimensions of the standard UNF-3 thread form or its capability for inspection by standard gages and conventional techniques.

The new Double Durability nut offers the design engineer these advantages:

IN EXISTING DESIGNS—

1. New, higher standards of reliability under fatigue conditions . . . without effecting interchangeability.
2. Freedom from restrictive maintenance procedures—reduced maintenance costs.
3. Weight saving opportunities (where present fatigue performance is satisfactory) by use of low height Double Durability nuts and shorter thread length bolts.

IN NEW DESIGN—

1. A completely fresh approach to fatigue control of fasteners. Use fewer bolts and nuts to carry a determined load; or use the same number of a smaller nut and bolt.
2. For highly critical applications where fatigue loading is heavy . . . or not precisely determined, Double Durability parts can be specified to assure a high safety factor.

ESNA®

ELASTIC STOP NUT CORPORATION OF AMERICA

ELASTIC STOP NUT CORPORATION OF AMERICA
2330 Vauxhall Road, Union, New Jersey, Dept. 5-43-1025

Please send me Design Manual No. 5930 analyzing the effects of fatigue on threaded fasteners and including complete data on the new Double Durability types of Elastic Stop nuts.

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